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## COMMUNITY DRIVEN

CCP Games CEO **Hilmar Veigar Pétursson** on the role of urban planning in online game design

RECRUITMENT ■ LIVING GAMES ■ NEURAL NETWORKS

## AT A GLANCE

**DECEMBER 25TH**
**CHRISTMAS DAY**
The start of a whole week of playing video games

**JANUARY 1ST**
**HAPPY NEW YEAR**
New year, new you. New us! New everything. All of the new

**JANUARY 23RD**
**THE INPATIENT**
Supermassive's prequel to *Until Dawn* is now a 2018 release

**FEBRUARY 27TH**
**FAR CRY 5**
This time, the *Far Cry* universe heads to Montana to face a cult

## DIARY DATES

**PAX SOUTH 2018**
**January 12th, Henry B. Gonzalez Covention Center, San Antonio, US**

### DECEMBER

**VRX 2017**
December 7th, Marrior Marquis Hotel, San Francisco, USA
*events.vr-intelligence.com/vrx*

**Montreal International Game Summit 2017**
December 11th, Palais de Congres, Montreal, Quebec, Canada
*migs17com/en/accueil2-2/*

**in-VR Gaming Convention**
December 28th, via your VR headset
*http://in-vr.co*

### JANUARY

**Ludicious Zurich Game Festival 2018**
January 18th, Zeughaushof, Zurich, Switzerland
*ludicious.ch*

**Pocket Gamer Connects London 2018**
January, 22nd, The Brewery, London
*pgconnects.com/london*

**DreamHack Leipzig**
January 26th, Leipziger Messer, Leipzig, Germany
*dreamhack-leipzig.de/en/*

## EVENT SPOTLIGHT

GAMESFORUM LONDON

**GAMESFORUM LONDON 2018**
**Where:** London
**When:** January 24th, 2018
**What:** The new, rebranded Mobile Games Forum event, has grown to encompass more of the industry
**globalmgf.com/london-home**

## COMING SOON

MCV
THE BUSINESS OF VIDEO GAMES

**MCV #932**
**JANUARY 2018**
As you may have heard, this will be the last issue of Develop magazine. From January 2018 we will be joining Esports Pro and MCV as one, to be published under the MCV banner.

You can read more about this move online and in Jem's editorial piece across the page. If you are a Develop subscriber, you will automatically be moved to an MCV subscription and the new MCV will continue to publish the development focused content that you've come to expect and enjoy from the pages of Develop magazine.

We hope you enjoy what's to come!

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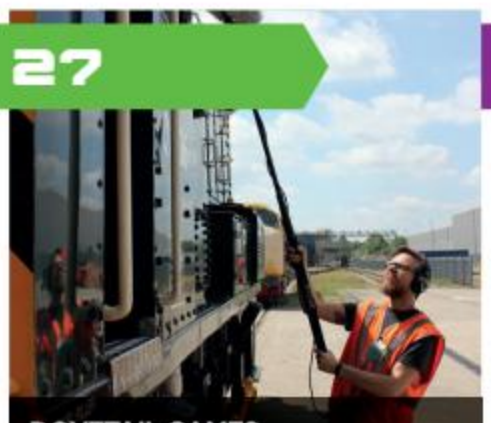

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## Editorial

**You hold in your hands the final issue of Develop. From February 2018, we – along with esports pro – are merging under the MCV banner in order to better serve the breadth and depth of the video games community with a single, specialist, brand.**

It's been an honour and a privilege serving the global video games community as editor of Develop over the last year and a bit. I'd like to take this opportunity to thank the team here at NewBay, along with all our excellent contributors during that time for helping to make Develop the best place to find game dev analysis and insight.

A big thank you to all of our readers, too. That means you. Your hunger to keep on top of the latest trends and (hah) developments is what fuelled us over the months and years.

Fear not, however. Our content won't disappear, in many ways it will improve. MCV is evolving too, and will bring development-focused content to you across the website, monthly magazine and socials with more focus and investment than ever before. MCV represents an exciting opportunity for us to create something new while staying true to our roots.

> **The new MCV will carry the Develop torch onwards as it evolves into a multi-discipline monthly behemoth**

In the meantime, we have a huge final issue for you this month. Our last issue is a recruitment special, with a cross-industry state of the union on the games job market, as well as a cover feature on CCP and the rise of community-driven dev.

Thanks again for being such a fantastic audience. We hope you look forward to the changes in the new year.

**Jem Alexander**
*jalexander@nbmedia.com*

# OUT OF THE BOX

Loot boxes, eh? Who'd have 'em. **Jem Alexander** reminisces back to a time when everything the light touched was a loot box. And he turned out alright in the end. Mostly.

I remember loot crates back when they were called "booster packs". £2.50 for 15 *Magic: The Gathering* cards. As an 11 year old (and for too many years beyond), this is where a lot of my money would go. To the point where the bottom drawer of my bedroom dresser would open with the gentle 'ssshhhh' of a shifting sea of discarded commons and uncommons. Not 'discarded', perhaps. 'Filed'.

Sometimes I would venture inside, torch and trowel in hand, to dig through the strata. Layers of cards from different *Magic* expansions, clearly marking the passage of the years.

The point is, I spent a lot of money on cards that I didn't need or want, or those that I already had. Even more money when you factor in *Pokémon* cards, and *they* only came in packs of ten – for the same price!

It's true. Both *Magic: The Gathering* and the *Pokémon Trading Card Game* were pay-to-win, and they didn't even have the basic decency to be free-to-play. Where were the Wizards of the Coast reps handing out starter packs on the streets? "Your first hit's free, kid."

Was I addicted? I don't think so. I was just a stupid magpie, desperate to collect the rarest rares (I touched a Black Lotus and a Birds of Paradise once – and no, not one of those Xth Edition reprints) and fill a folder full of foil versions of cards that languished at the bottom of my bedroom drawer.

## TOYS TO LIFE

Before even all of this, there were capsule machines. "Collect the set!", it said. Sure, why not. At a quid a pop, I could have the whole cast of Looney Tunes for less than £15. Easy.

Yeah, right. Tell that to my five Bugs Bunnies and my empty wallet. Not that I had much of a wallet then. A garish velcro contraption that seemed to constantly hold exactly one pound coin and one penny in change, plus whatever I was about to spend on *Magic* cards.

And let's not forget Kinder Eggs. Banned from even entering the United States of America, but not for fears of gambling, or addiction, or kids wasting money on its unknown contents. Instead because of (frankly unfounded) concerns that people might accidentally eat plastic toys. And yet, these decades-old desserts remain very similar to the video game loot crates that are being debated across the industry and which the government of Belgium is considering banning. Ironic really, since Belgians *love* chocolate.

As someone with an addictive personality there have been more than enough money-grabbing claws offering shiny things (or rather, the *possibility* of shiny things) for small amounts of money. Nickel and diming, it used to be called. Now we just refer to it as microtransactions.

So I don't really see any problem with loot boxes in video games, in theory. Magpies gonna magpie. We all know how expensive games are to make nowadays, and if people are happy to pay for randomised cosmetic gear and boost the game's revenue (and possibility of a sequel and/or prevention of a studio closure) then great.

## MOSTLY HARMLESS

Buying any of the things I mentioned earlier never did me any harm. I always felt like I got my money's worth. Yes, even when that Kinder Egg with the *Lord of the Rings* characters on the box opened to reveal a tiny basketball and hoop set. Or a microscopic sodding car.

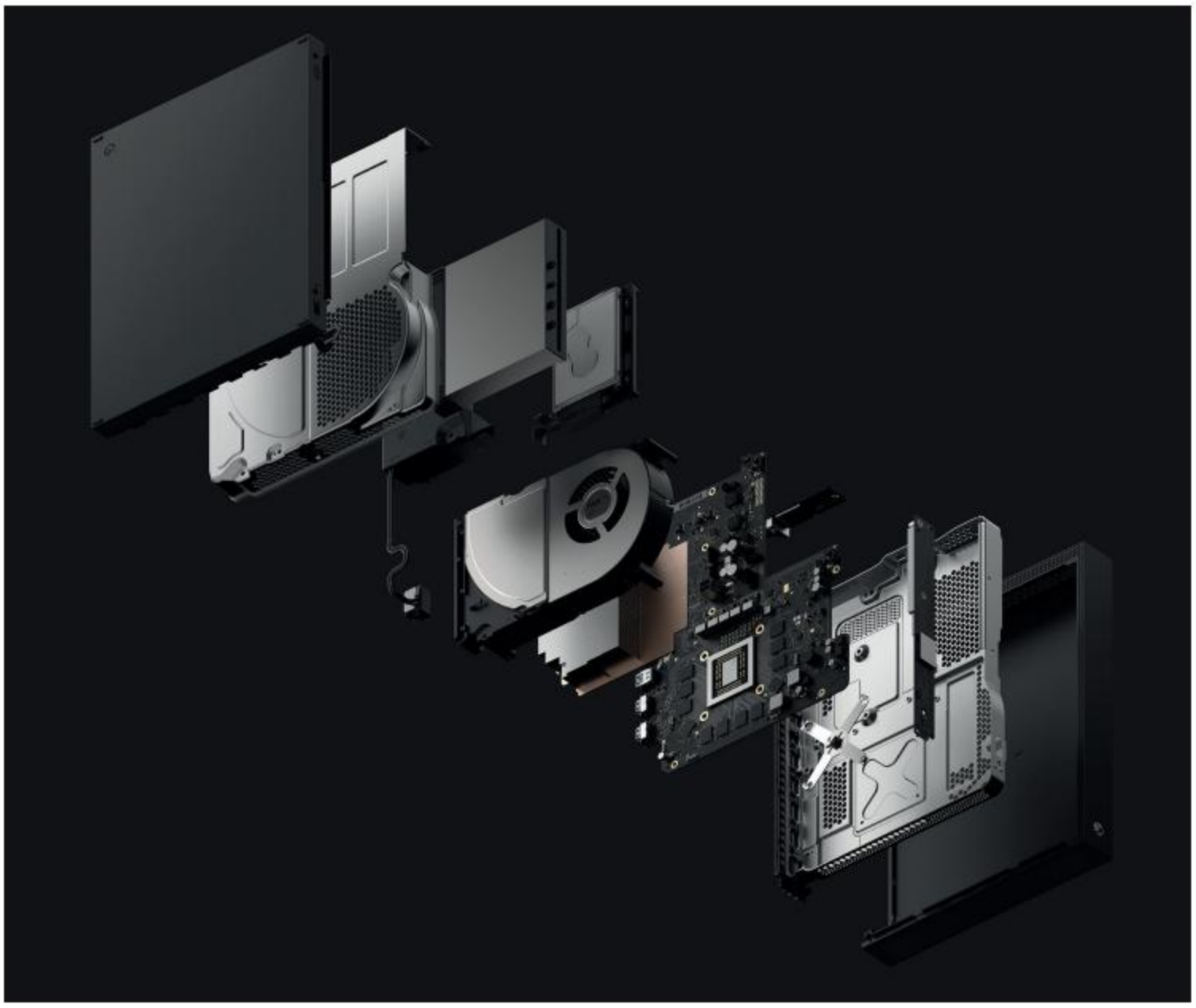
In the world of video games, outside of cosmetic gear, things get a bit murkier. Pay-to-win isn't necessarily evil, as long as the game is designed around it and my narrative experiences aren't sequence-broken by the availability of high-level, game breaking equipment through microtransactions.

There are plenty of games that do loot boxes well. *League of Legends* has it nailed. *Destiny* has done a pretty decent job, too. In both games loot boxes are made available to players as they progress through the game. Rewards for continued play. And they never contain content that could offer an advantage to one player over another. Unless you count my super cool, rainbow-spewing Sparrow as an advantage. Sadly, looking awesome doesn't make you a better shooter.

Once again the industry is experiencing a phase of experimentation. Testing the waters to see where the boundaries are. And once again, gamers are not being shy about giving their opinions about this. There's a lot of extreme opinion flying around but, as ever, somewhere in the middle there's a happy medium that we'll all eventually settle on. Hopefully that arrives sooner rather than later. ■

# THE PERFORMANCE **REVOLUTION**

'The world's most powerful console' was the marketing hype behind the Xbox One X and, on paper, it is. While market analysts wonder who the console is for, **Sean Cleaver** asks what the benefit is for developers and if this move to 4K power is what this generation of consoles needs to evolve



I will immediately come out and say that the Xbox One X is a great console and, as someone who regularly enjoys backward compatible titles on his Xbox One, the improvements the X can bring to some games visually is night and day. *Assassin's Creed* almost looks like a remaster.

It's clear that there are gamers who want this, probably more than was expected. 80,000 is not an insignificant number for a console launch, especially one seen as high end and for a very specific type of gamer.

I'm hoping this means that we'll see a more unified approach to 4K gaming. I wasn't even sure, as a gamer, that I wanted 4K specifically as a feature. Sure, it looks great but many things look great already. What I really want, and I'm sure what many others want, is the improved framerate and AI performance that can be achieved.

Sure the example of backwards compatible games isn't a great one, as some of these games are ten years old, why shouldn't they look better on a superpowered machine? Remembering my days as a PC gamer, I recall installing a new graphics card and loading up older games, just to see how well they performed. Getting great graphics in *Spore* or *Quake 2* helped validate my purchase.

The Xbox One X feels a bit like that to me which, I know, sounds weird. Especially when the Xbox One games that are improved are not exactly that old. *Quantum Break* and *Halo 5: Guardians* are both games that were performing fairly well in their own right but they were not without their graphical performance issues.

*Quantum Break*'s 900p resolution was a sticking point for many online commenters but the fidelity compromise led to a smoother and much more visually opulent experience. *Halo 5*'s dynamic resolution meant that, again, a stable frame rate was achieved but at the cost of visual fidelity. This is no longer an issue with the Xbox One X and it's easy to forget that these are good games that a larger audience may not have played.

The issue with this new super powered console is what it will mean for future game development, especially for a third party developed title. 4K ready games are nothing new and the development pipelines already exist for them, but there is now an issue of device parity.

Technically, the Xbox One X is the console that can offer the most power for developers, but the PS4 Pro is also competing on this level. When a game needs to be made for both consoles and their lower powered siblings, the extra power allows for a better overall experience but can be useless for developers releasing on every console.

The question has been 'who is this console for' but for the most part that question has been aimed at gamers.

> **I hope this signals a change in game development**

Sure, for developers it's obvious that it's for people requiring the power and who already invested in these pipelines. But who is really going to make the best use of this extra power that's available and how will they use it and not undermine any other platform they are developing for?

From what I've experienced, nothing looks to have suffered at all across devices and the improvements on older titles and existing games is incredible to see. I hope this signals a change in game development. The constant need for more power should lead to better experiences, more complex AI and an increased scope of development potential.

Visuals aside, I am much more intrigued with performance and getting more complex experiences. Now I've seen more, I want as much as possible to take advantage of the hardware on offer. Hopefully with this console and the many that will follow in future generations, this can be achieved. This current generation is finally moving on and is beginning to push technology to the next level. ■

# STYLISATION, RHYTHM AND SAVING YOUR SANITY

Following on from her talk at the recent DevelopVR conference in London, senior concept and environment artist at Climax Studios, **Anna Hollinrake**, looks at the how Climax developed Lola and the Giant for Daydream VR and the lessons the team learned while developing the mobile VR game

Developing for mobile VR can be a challenge. Trying to create expansive, visually engaging worlds with bright, diverse environments that work from two points of view can be even more so. As an artist on *Lola and the Giant*, a first person/third person narrative adventure game for Google's Daydream VR headset, we were faced with technical challenges from day one. But the team used these restraints as a springboard for creativity, rather than battling against them.

From the get go, the team wanted to avoid making the visual load too stressful on the phone. It seems obvious with hindsight, but by directly comparing our vision for the end result – an airy, open space – with the need to not have too much on screen at once, we could make bold choices that would help us avoid optimisation hell later on. We opted for floating islands, rather than a world set on the ground, which would allow for the immediate reduction of visible polygons on screen. You don't need quite so many trees when there isn't a floor to root them to.

We were also well aware that aiming for realism in a mobile VR space is only planning for heartbreak. The key to a successful visual style when working in low poly is through getting the most out of your shapes, and by building angles into an art style.

There's a reason *The Legend of Zelda: Wind Waker* has aged so well; ITS visuals are a masterclass in vertices that all say something. Using sharp corners that contrast against curves utilises the age old artistic principle of rhythm (repeat things in fun ways), and is a great way to make something that is aesthetically pleasing to look at whilE giving your rendering engine a break.

Similarly, implying detail through gashes in rock or chunks of missing roof tricks the brain into presuming it's viewing something at a higher fidelity than is actually the case.

Unsurprisingly, environments viewed both up close in third person as Lola, and far away in first as the Giant, need to look visually arresting from both viewpoints, and adding dramatic, silhouette changing details such as this worked both up close and far away (and additionally work incredibly well in VR).

As with a great deal of games development, getting the right visual style does seem to be built on a series of clever ruses. Our approach to environment art also took us back to the heady days of texture atlasing and techniques from the PS1 and PS2 eras, using segments of detail laid on top of each other and cut into models rather than creating unique materials. One 4K texture was all we had to work with for each individual world, but the possibility of seeing just how far you could push models in terms of creative reuse of textures made set dressing and worldbuilding a fun challenge.

> **Getting the right visual style does seem to be built on a series of clever ruses**

Ultimately, this was a theme we saw repeated over and over throughout development – take something that would normally be frustrating and reflect it back on itself as a positive. Through working with limitations we can open ourselves up to even greater creativity. ■

# KEEPING A STIFF **UPPER LIP**

The only thing permanent about the British games industry is its inpermanence, says indie developer **Mike Bithell**. In this, the final issue of Develop magazine before it merges with MCV, this is especially apt

There are certain things one assumes are permanent in the British games industry. Sports Direct coffee cups somehow always sat in the staff sink. The person on the neighbouring desk to yours always being far too fond of Transformers and/or odd manga figures. Cake day, interminable, absolutely overwhelmingly repeatingly always bloody cake day. And, until now, the copy of Develop magazine sat on a coffee table somewhere.

Develop was around when I got my first job in the industry, a weird magazine that my bosses, the Oliver twins, always seemed to be on the cover of. Them or the venerable Ian Livingstone. Back then it was a little on the pessimistic side. Canadian tax reliefs had come in, and a lot of people with midlands accents were learning French. I remember the cover of Develop, or maybe MCV, bearing the apocalyptic headline "Could the last developer to leave the UK please turn the lights off". Great words to see when starting a career with a hefty student debt.

The UK was doomed and big studios like the one I worked at were certain to fall under their own weight.

Which was sort of true, but also only a small part of the picture. Digital distribution would arrive in a big way with Steam and Xbox Live Arcade. Initially little more than a new way to sell games, a few smart folks, like the chaps at Introversion, saw they also paved a path to a new way of making them. A lot of the larger studios might fall, but even more smaller studios would grow in their place. Like that bit in **The Lion King** about gazelles and grass and circles. These little studios were fast, able to adapt and change quickly. They were 'agile', as that one 25-year-old in a suit at every trade meetup likes to call it.

Develop reported on and predicted many of these shifts. Mobile, esports, the works. Of course, they also got a bit too excited (like the rest of us) about cul-de-sacs like motion control and Facebook games. Now we've strapped those motion controllers to our heads and use Facebook primarily to moan about the microtransactions we invented for Facebook games.

> **The British kids of the 80s had to make their own fun, literally, by typing code into a PC**
>
> *Mike Bithell*

Right now, things are in a tough place; an unknown political future for the country, harassment within our communities, and small studios struggling to find an audience. But I suspect we'll solve those challenges like we have the others. I suspect we'll continue to start small studios in sheds, grow mega corporations above shops, and occasionally sell everything to an American who drives a cool car. Or maybe someone from China with a cool jetpack. That'd make a pretty great Develop cover. Can we keep this thing going for another month so I can throw something together in Illustrator?

There's something particular about the way we make games here. We thrive as an industry with all the limitations and challenges afforded by our geography and population size. The British kids of the 80s had to make their own fun, literally, by typing code into a PC. Nowadays, school children are taught to code, and play **Minecraft** on Raspberry Pi. We like to play games, but we love to make them. We enjoy creating fantastic new experiences, throwing a hundred things at the wall and hoping something moves the industry forward.

Which is all a convoluted way of saying that the games industry is defined by its lack of permanence, and the UK industry even more so. While Develop may no longer be with us, I'm sure the UK industry will continue to be utterly ridiculous, a shifting mess of genius and unpredictable stupidity. Long may it remain utterly impermanent.

But let's keep the Sports Direct mugs. They're essential. ■

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# COMMUNITY DRIVEN

Events like EVE Vegas – an annual fan meetup for EVE Online players deep in the heart of sin city – are not only key to keeping the community happy, but also helping steer developer CCP's future development. **Jem Alexander** talks to CCP's CEO, Hilmar Veigar Pétursson, about the event and how creating content for a fanbase becomes more like urban planning than actual game design

CCP's annual fan events, hosted in Las Vegas and the developer's home town of Reykjavik, are an important part of the company's culture. Like town hall meetings, but with more alcohol. They are key touch points for CCP to connect with players of *EVE Online*, the single shard MMO that serves as a battleground (both politically *and* with lasers) for a growing number of spaceship fans. The perfect place to discuss the future of the game and, literally, the universe.

At EVE Vegas 2017, taking place just shortly after the game's biggest ever political scandal and heist, emphasis on community was clear. Here were enemies – people who had stolen many thousands of dollars worth of in-game assets, who had ruined careers and reputations within the *EVE* universe – mingling and chatting and drinking together in apparent harmony.

"For all their notorious shenanigans in the game, these are some of the best people in real life," says CCP CEO Hilmar Pétursson. "They are all friends and great people. I think it's because they get all of their frustrations out in the game, so it makes them more adjusted and balanced in reality."

The timing of this year's Vegas event came at a difficult time, just a week after the Mandalay Bay shooting. The 100 attendees at EVE Vegas, plus many more *EVE* fans at home, contributed over $16,000 to the various charities offering relief to those affected. Something that came as no surprise to Pétursson.

"It's pretty amazing," he says. "It's something that we just know about our community. We've done so many collection efforts with the community for various events around the world. The first one we did was the tsunami in 2004 in South East Asia. That was the first community collection drive we did and it was very well received.

"We did that mostly because we have the ability to collect payments from people, because we do it through the game. Often that is complicated for charities, especially back then, and we have an efficient system – the Plex system – where people can basically donate in-game currency and we can convert it over to real currency through that system. It's hundreds of thousands of dollars so far. So the fact that the *EVE* community immediately came together around the events here in Vegas is... We just know that about our community. They love to help out anyone in the world."

## URBAN PLANNING

Having such a generous community is enviable in a climate where certain facets of game fandom have problems with toxicity. How has CCP built such a delightful, passionate fanbase? In short, through mutual trust and respect, as well as an open dialogue and active listening by CCP.

"I can tell you how it all started," says Pétursson. "Back in 2003 we had just released *EVE Online*. It wasn't done, but it was done just enough to get it out there. We had a small staff up in Iceland and we were running out of money, so we had to release the game. So there was no huge methodical plan, even though we intuitively knew that getting players into it was a way to complete the game. But it wasn't a thought out go-to-market strategy. It just felt right.

> **Fans were arguing a lot on the forums, and I thought 'Ugh, I wish we could just have them over, and we could talk it through'**
>
> *Hilmar Veigar Pétursson*

"Then people came into the game and they populated the world. They started to build their own adventures, just like we hoped for. But then they took it to eleven, or more like eleven hundred. So we thought 'Okay, this is probably a thing – co-creating a game with the community'. But we didn't really have language for it back then. We were doing this out of raw intuition.

"It was pretty cool for a while, but then we weren't able to keep up. People's demands for progress were higher than our ability to get it done. So it ended up in this kind of unproductive state for a while, around early 2004. People were impatient about getting some things fixed, they were arguing a lot on the forums, and I thought 'Ugh, I wish we could just have them over, and we could talk it through. We need something like a conference'.

"I remember sitting in my office and deciding 'Okay, let's just do that!'. So then we advertised and said 'We're having a FanFest in the autumn of 2004 and it's going to be in Iceland and I hope you guys come. We're going to talk about spaceships and what the plans are for the future.' At the time this idea was complete madness.

"We thought that maybe thirty people would come. We sold three hundred tickets. Three hundred people flew to Iceland, some getting passports for the first time. Then when everyone was together in person it was a super productive way of talking through things. People immediately saw that we were killing ourselves trying to make the game tick.

"Making a single sharded MMO where everyone was in the same game was a borderline impossible feat. It's barely been replicated since, and this was back in 2004. FanFest became one of the tools and, as we progressed, we developed this toolset and these processes to more productively engage with people."

It turns out that a mutual understanding of your audience as actual people is key to developing strong community relationships. Not only as developers, but also understanding that they will all have interpersonal relationships with one another. Especially in a game so intrinsically political as *EVE Online*.

"We came up with the Council of Interstellar Management," says Pétursson. "Where people are elected to be representatives of certain areas of the game. As the years have passed we have developed these mechanisms to have structured engagement on how to evolve the game going forward. So, in a way, the game is not done yet. We're still co-creating it with the player base.

"*EVE* is more like a city than it is a game. If you are doing urban planning in a city, getting feedback from the inhabitants is important. You might have to bulldoze away some houses to make a highway, or you might have a garbage collection problem, and it's impossible to know all this. We have no way of knowing all the things in *EVE Online* that the hundreds and thousands of people who live there do every day. They have way more information about it. So factoring in all

the information about the game, their input on where the game needs improvement, putting those two things together is what the *EVE* team does every year."

## CO-DEVELOPMENT

Perhaps it is developing a game alongside its fans that led CCP to seeking other studios to work with for two upcoming games. *Project Aurora* and *Project Nova* were both announced at EVE Vegas this year, as well of the development partners who will be working on each. *Project Aurora* is intended to be an *EVE Online* experience shrunk down for mobile, while still retaining the full depth and strategy boasted by its older sibling. It is being co-developed by mobile developer PlayRaven.

*Project Nova* is a resurrected project long assumed dead by the *EVE* community, a first person shooter set in the *EVE* universe. Little more is known about it, other than the fact that UK studio Sumo Digital is helping CCP bring it to life.

"In my view, the industry is becoming more and more specialised," says Pétursson. "The different platforms and genres require more and more specialisation, and having all of that talent in-house is not a very sustainable thing. By co-developing, we are tapping into people who have specialised in certain genres and platforms; in the case of Sumo, for shooters and in the case of PlayRaven, for mobile.

"It's a way to leverage expertise in the world without having to hire people for a short period of time. That puts us in a place where we have more generalists, while we work with other people who have focused in certain areas of games."

But CCP isn't precious. If you're relying on external developers to input into your design and codebase, you can't afford to be. Otherwise you're not fully taking advantage of the skills and expertise they have to offer.

"Both companies have a lot of input on game design," Pétursson explains. "A lot of impact on look and feel, second to second, those kinds of things, because that's where the rubber meets the road. At CCP we have the most expertise is in economies, communities, large scale games that go on forever. Collaboration with communities. Feedback channels. All that stuff that we are pretty specialised in."

So how does one go about finding the perfect development partner for projects like these?

"In the case of PlayRaven, I've known them for years. We met up last year at a conference. CCP already had this idea on the roadmap, of a strategic *EVE* mobile game. And PlayRaven were already gearing up to do something similar. So it was a bit of a serendipitous meeting of the minds.

"In the case of Sumo, we had a fairly broad process of talking to a lot of people who have that kind of shooter specialisation. Working with each and every one, seeing how they see it, explaining how we saw it. The greatest fit out of that process was with Sumo."

## THE ICELAND COMETH

The EVE Vegas event is very different to Fanfests hosted in CCP's hometown of Reykjavik. The glitz and the scale of Las Vegas has a hugely different vibe to the capital of Iceland, where the studio is very much a big fish in a small pond. Fans we spoke to at EVE Vegas reminisce fondly on the "invasion" of *EVE Online* fans, taking over entire bars and eateries as the group maneuvers through Reykjavik during the event's popular Pub Crawl.

CCP's existence in the region has helped the games development community in Iceland grow. Not only through the company's willingness to help new studios get on their feet, but by inspiring and encouraging investment in development skills.

> **Different platforms and genres require specialisation, and having all of that talent in-house is not very sustainable**
>
> *Hilmar Veigar Pétursson*

"Iceland is a country of 300,000 people," Pétursson says. "Just to put it into perspective, it's like Brighton in size. There are a lot of companies, maybe 20 games companies in Iceland and I think that plays some part in inspiring people to go and try out their skills in making computer games. Nobody really has broken through yet, but there's a vibrant ecosystem compared to the size of the country.

"It's always better to have more companies than fewer. We've done our best to try to help everyone who is getting started. We have a lot of relationships in the industry, we spent a lot of time helping people with first steps because if the overall industry in Iceland grows, that's good for anyone."

For those looking to create their first games, wherever you may be living, Pétursson has some sound words of advice, along with one question. What's stopping you?

"It's easier than ever to make a game," he says. "You have excellent tools and you have all of these Early Access phenomena, which is a great way for a small first-time team to get something out there. I would encourage people to do something simple and quick and release it. Go through one cycle. Don't try to get it right the first go. Because you don't really have to today.

"When we were making *EVE Online* we had to make everything. We had to make the engine, the server architecture... Oh my god we had to make so much stuff. Now, you just get your engine, get your plan together, release it on Early Access and voila! And if it doesn't work out, you can try again, because the tools are available.

"Of course, there's more competition, because it's easier to do, but the best way is to get started. It's very inspiring to see teams releasing games within a year, getting immediate feedback and cycling again and again. Before you know it you have something like *PlayerUnknown's Battlegrounds*, which is phenomenal. That's not something you can repeat that concretely, but there's such an easy way to try things out and release it and see if you find an audience." ■

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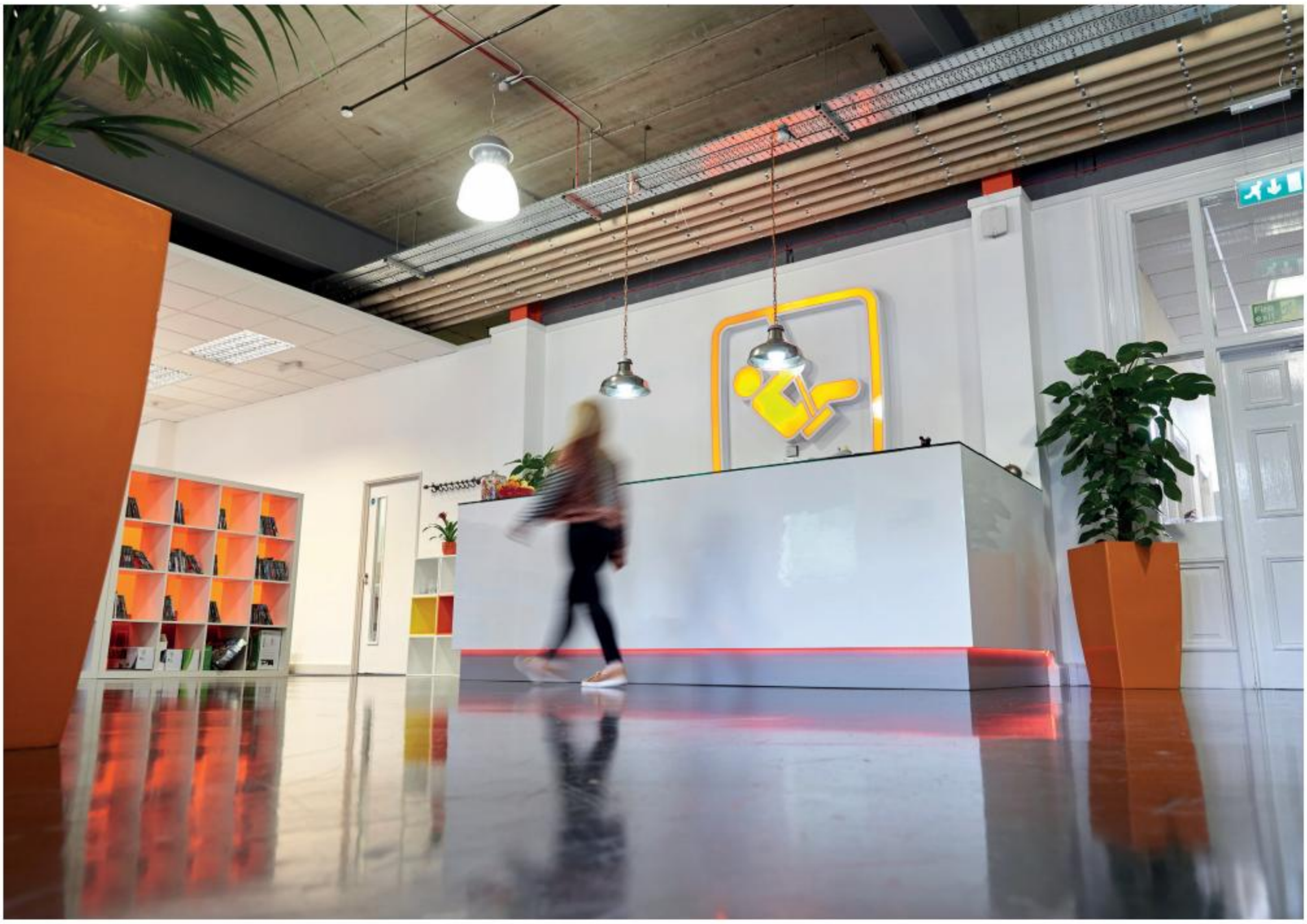
# FINDING WORK IN THE GAMES INDUSTRY

We've scoured the UK to chat to developers and recruiters about the state of the games job market. **Jem Alexander** investigates the difficulties of finding a job – and decent employees – in the current climate



The video games job market moves at a faster pace than the industry itself. In order to keep up with innovations within the industry, employers (and employees) have to predict the future and look to specialise in areas that may not even exist yet. We spoke to several developers and recruitment agencies in the UK and, while their predictions may not all align perfectly, one thing they do agree on is that the state of the UK jobs market is booming.

"There is a lot of activity in the games job market," says Nathan Adcock, PR and marketing manager at OPM Response. "Recruitment agencies are the first to know when there is a recruitment boom in their industry, and we've never had this many active jobs before."

Developer Jagex feels like there's been a shift since several big UK developers closed over the last few years. "Right now, the job market is both a vibrant and volatile one," says Pete Lovell, director of talent acquisition at the studio. "It's certainly recovering from the lag that a raft of studio closures created a couple of years ago and, while we still see news of closures, there's a better and more healthy balance of small, midsized and larger studios out there. For every studio that closes, we seem to be gaining more, and there's a healthy buzz coming from the main UK development hubs."

*Forza Horizon* developer Playground Games is a great example of where and how this talent gets redistributed. "The UK games job market is buoyant and fast-paced," says Nick Duncombe,

**Clockwise from top left:**
Alex Wright-Manning (Splash Damage), Ian Goodall (Aardvark Swift), Liz Prince (Amiqus), Pete Lovell (Jagex), Jonathan Amor (Supermassive) and Nick Duncombe (Playground Games)

the company's resource manager. "The market has more open roles than job seekers, and studios across the UK are expanding. Playground Games has expanded to nearly 200 members of staff in 2017 and we need to hire another 250 over the next two years to meet the needs of our second studio, working on a triple-A open-world action / RPG project.

"Developers have a lot of choice if they are looking to change jobs. With a candidate-driven market, studios are having to ensure their proposition is not only in-line with their competitors, but offers something better, different, or both. Playground operates an uncapped royalty scheme, which allows our staff to share in the success of our games and has seen staff who worked on *Forza Horizon 3* throughout development double their salaries this year."

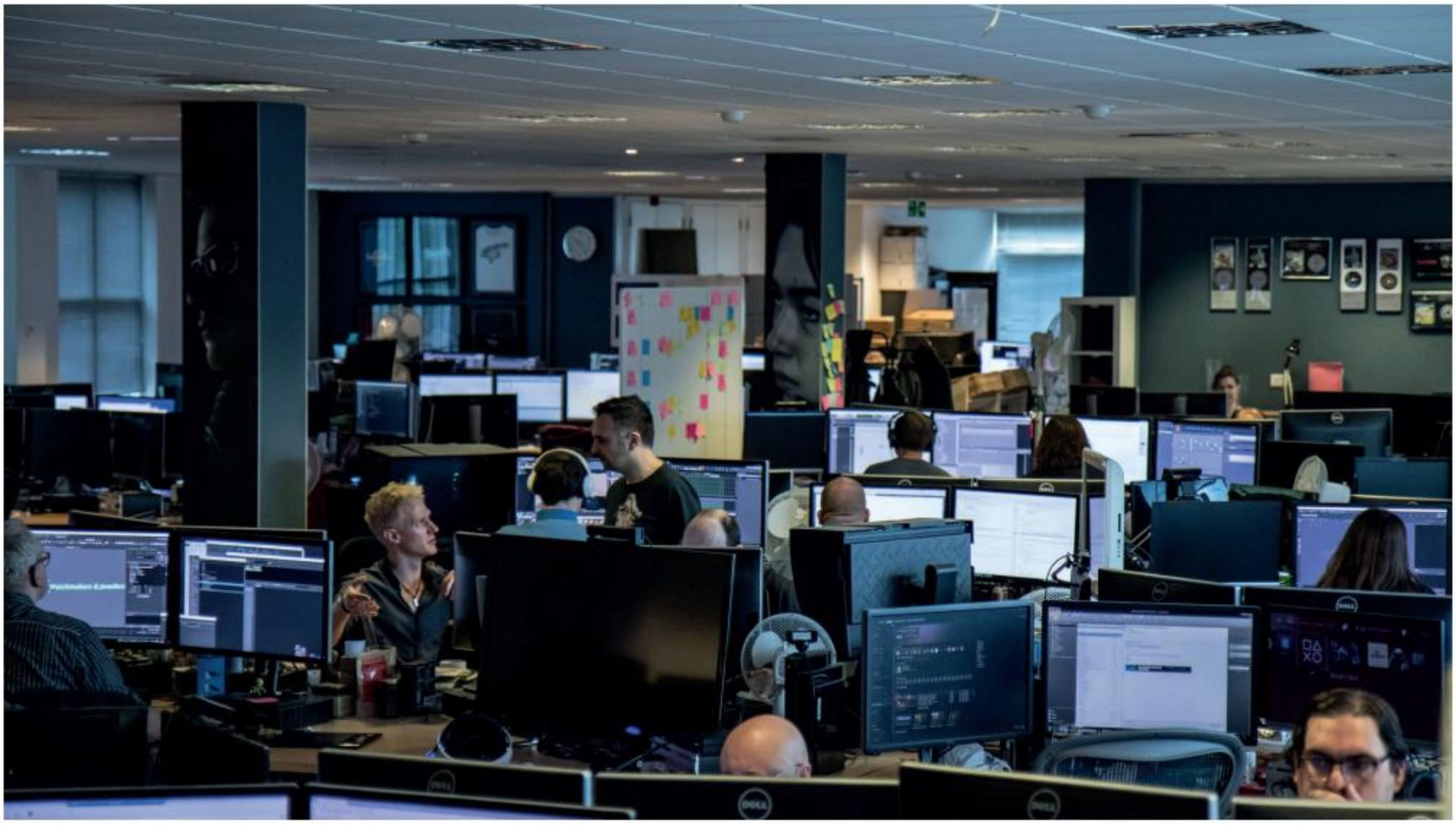
This is great for developers looking to switch roles, but it's harder for employers to find specialist talent, particularly of a high level. "Without wanting to sound over dramatic, the UK games jobs market is a bloodbath for talented games developers," believes Aardvark Swift managing director Ian Goodall. "Experienced developers are as scarce as they have ever been, there are dozens of studios looking to size up in large numbers and dozens more behind them sizing up on a smaller scale. Add to this the trend of experienced devs setting up smaller indie studios, and we end up at a point where there is very little or no 'available talent'. The situation has never been healthy, but right now it's worse than ever. There are acute pain points like C++ coders, graphics programmers, tech artists. Ultimately there are not enough very talented games devs to go round!"

*Snake Pass* developer Sumo Digital feels that this is especially true for those higher up the food chain. "We're finding that as the demand for specialisms grow with the scale and fidelity expectations of this generation of console development, that candidates at the more senior end of the spectrum are harder to find," says Rebecca Askham, internal recruiter at the studio. "There's a notable influx of graduates and people in the earlier stages of their careers, because university courses are coming of age, but the veterans seem to be more content to stay where they are – perhaps because as they get older, their lives become more rooted in place because of family and other commitments."

## SPECIALISM

The specialism of the games industry is something that Jagex's Lovell sees as an important thing for developers and students to keep in mind as their career progresses. "Ensure that whichever area you choose to specialise in, you double down on that specialisation," he says. "The roles for a jack-of-all-trades developer are less numerous in the bigger studios; it's about knowing your specialist area deeper than ever before and gaining the right professional experience in that area.

"If you're looking to break into a



specialist development role, demonstrating your personal interest and passion in that specialised area is key. Showcase how your interest has influenced your personal projects, prove your personal investment in the specialisation and demonstrate that you have a full spectrum of understanding in it.

"For Jagex, we have a focus on those who have experience in F2P and mobile. Talent with a strong understanding of those business models and their associated disciplines – whether it's UA marketing, cross-platform development or UX driven design – are core and increasingly important. In addition to securing people that are scientifically creative – big data, business intelligence professionals."

Meanwhile, at Newcastle-based Ubisoft Reflections, knowledge of games as a service is more valuable as a potential employee.

"For us and many others, live services within games affect the amount of resource we need to support these, producing more opportunities for job seekers," says Jose Paredes, programming architect at the studio. "From an engineering point of view, we are making games that are delivering new content and features to players for months or even years. Knowledge in software architecture and software design is very important, as systems have to be written in a way that are robust and functional not only for release day, but also for the whole life of the product. With this in mind, UK developers that have live services will continuously search for knowledge in highly specialised areas. As a result of this, we currently have a variety of programming opportunities at all levels at our UK studios, Ubisoft Leamington and Reflections."

Paredes' colleague Joseph Rogers, production manager at Ubisoft Reflections, adds that there are some key personality traits that make people even more employable. "If you look at a company on the scale of Ubisoft, one of the challenges we're facing now with large development teams is finding enough people who are interested in leadership," Rogers says. "Having an interest in mentoring and leading and developing those skills is and will be very relevant with the size of development teams working on triple-A products.

"It doesn't have to be something you already have experience of either, maybe you're looking for your first job in the industry. At Ubisoft we have an expectation for all people to bring a leadership mindset and there's plenty of resources out there that can help develop these soft skills."

> **Having a team that understands the 'live product' mindset is only going to become more valuable**
> *Alex Wright-Manning, Splash Damage*

Alex Wright-Manning, senior recruitment manager at Splash Damage, comes back to live games. This is a clear growth area in the industry and one in which developers would be wise to gain some skill:

"We've all mourned the recent closure or restructuring of some of the industry's most highly respected single player focused studios. This is indicative of big publishers working to the – quite factual – data around the increased longevity of titles with an online/social focus. The term 'games as a service' is a divisive one for many but, ultimately, it's a direction that the industry has been heading for a while, and having a team that understands the 'live product' mindset is only going to become more valuable."

## KEY SKILLS

Across all of the studios and recruiters we spoke to, there was a huge variety of different specialisms that were discussed. This speaks to not only an increase in granularity within different skillsets, but also a divergence of focus across the industry. But some of these skills are as vital and basic as competency in a top games engine.

"Experience with Unreal Engine has become more and more important for us across all disciplines," says Supermassive Games' operations director Jonathan Amor.

Beyond that, we see some very specific needs. "Artists need to have an appreciation of how to use physically-based rendering materials," Amor continues. "There is more emphasis on specialised lighting artists. There is so much more potential with lighting now and you need strong technical and artistic skills in order to get the best out of the latest renderers. For us there is also a move away from traditional key frame animation to motion editing."

Playground Games' wishlist looks slightly different, however. "Procedural generation, moving away from traditional animation blends, Substance texture generation, machine learning and AI are areas all studios are looking to develop," Duncombe says. "While this knowledge is very much of interest to Playground we are also keen to hire developers with new ideas and techniques. Our 12K sky-capture in *Forza Horizon 3* is a great example of us taking an idea, developing it, and implementing it in-game."

And finally, the virtual elephant in the room. Aardvark Swift's Goodall believes that there's *still* a good opportunity for developers who are interested in investing their skill eggs in the VR basket. "The VR industry is growing steadily at the moment," he says. "During its early days not many developers had direct experience working with VR and it was a learning curve for much of the industry. However, it's been a couple of years now and it's likely that we'll start seeing studios specifically looking for developers with VR experience.

"Universities are training their students in VR now. These graduates now have a distinct advantage over many established developers. If VR is an area that you're interested in getting into, then demonstrating that you have a good understanding of the technology and a passion for where it's going is still sufficient at the moment. However, as experience becomes more widespread and desirable over the next few years, a side project using VR in your portfolio would help."

## STRENGTH FROM WITHIN

The strength of your studio can only be based on the strength of your employees. This makes it important not only for you to retain key talent that you already have, but also to use internal resources to hunt for new superstar developers.

"Review your benefits and salary bandings on a regular basis against your competitors and ensure you are an attractive option for potential employees," says Liz Prince, business manager at recruiter Amiqus.

"This doesn't have to be simply in terms of salary either, things like social events, relocation assistance, flexible working or great tech can carry a lot of weight. Also, get to know what is valuable to your team and talk about that. It could be the autonomy offered by working in a small team, the opportunity to advance your career or a great diverse team, strong culture of productivity and getting things done.

"Keeping current staff happy is also a crucial part of helping to attract new staff. The social validation that comes from current employees talking up your studio is massive. Whether it be on online forums, social media, Glassdoor, at events or even during a break in an onsite interview during a passing conversation whilst grabbing a coffee, or waiting for the interview to start. Every person a candidate comes into contact with from the moment they walk in the door to the moment they leave is a walking advert for you as an employer.

"Bear in mind that the recruitment process is as much you selling the company to the employee as it is them selling themselves to you. Sometimes it's too easy for studios to make this all about 'Why should we hire you' when the candidate is sat on the other side of the desk is thinking 'Why should I work for you'."

Aardvark Swift's Goodall sees retention as more important than recruiting new talent, and it's something that can feed into the industry ecosystem and help both studios and recruiters alike: "Studios are beginning to realise the importance of focusing on retention over recruitment. Not only is it cheaper for the studio, but it fosters an overall more productive and happy workforce. Benefits and work-life balance are becoming an increasingly important part of the average candidate's job search; especially those professionals who have sought-after skillsets, such as technical artists.

"This is great for us. While we make our money from recruitment, we want to see the candidates we place stay in their studios, rise up through the company, and ultimately return to us for help with recruiting

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their own team. We're very much in it for the long run."

But external recruiters are finding it harder, despite being industry experts, at competing against internal recruitment teams, according to OPM's Nathan Adcock. "Over the last five years games companies have got much better at filling their own vacancies," he says. "Internal HR teams can be just as savvy as recruitment agencies at finding the right people using social media and job boards, so a lot of companies only tend to use our services for the difficult to fill roles."

Supermassive gains a lot of new hires straight out of uni, but only because it has helped feed into certain university courses to make sure that the students are being taught relevant, useful skills. "We hire graduates straight from a range of different universities," says operations director Jonathan Amor. "The standard of courses seems to be improving, although there is perhaps a widening gap between the best and the worst courses. We think it's important to get work experience and learn the skills of working in a multi-discipline team, as well as getting a solid grounding in your chosen area."

## DIVERSITY

One area of recruitment (and the games industry in general) that we're seeing improvements in is diversity. For good reason, it has become an important discussion point, whether from the perspective of race, gender, sexuality or any other. Art is a reflection of the people who make it and, therefore, the best way to encourage more diverse people to enter the games industry is to show that they are welcome by including them in the games you are making.

They will reward you by helping to make those stories stronger and more authentic by bringing their life experiences to your game, thereby encouraging more diverse developers to join. It's a process, but one that is already exciting to see unfold in certain areas of the industry.

"Any down sides in complexity to hiring from abroad are outweighed by having a diverse workforce," says Amiqus' Liz Prince. "And once you open the doors to international recruitment, it gives hiring managers much more choice of skills and enriches the culture of your workforce. Additionally, for the candidate it can be a once in a lifetime opportunity which gives them and their family and friends memories for years to come. I'd say around 30-ish per cent of our clients are able to recruit from abroad, and as a result it is common. Some recent examples include relocations from New Zealand to Dublin, from Spain to Leamington Spa, Berlin to London and Romania to Finland."

"Games consumers are a diverse bunch," says Splash Damage's Wright-Manning. "So subsequently we should strive to be as inclusive an industry as possible. Development should be a meritocracy of course, but it's important that we support and shine a light on those groups that are traditionally underrepresented within the industry, and ensure that our selection processes are unbiased. Grassroots and community outreach projects should be a big priority for the industry moving forward, engaging with development stars of the future, and pitching games to all as the inclusive, open and fun career that it is – regardless of gender, colour, religion or sexual orientation."

There's agreement across the board from developers and recruiters alike. Aardvark Swift's Goodall believes that education at a young age will help the next generation of game developers be much more diverse. "For the games industry to innovate and thrive, it needs a non-uniform, diverse workforce from a broad spectrum of backgrounds bringing their differing experiences and viewpoints to the table," he says. "Historically the games industry has not been great with this, but it's been proven time and time again that more diverse teams outperform those which don't embrace diversity.

> **The recruitment process is as much you selling the company to the employee as it is them selling themselves to you**
> *Liz Prince, Amiqus*

"There's no quick and easy fix to encouraging a more diverse range of people into the games industry. In terms of gender diversity, computer science is still seen as a male dominated university and A-level discipline. This is a problem that needs to be tackled early on in education, with studios and role models stepping up, visiting schools and showing that this is an industry in which women can succeed and excel in.

"On a broader scale, I believe a more diverse range of candidates will be attracted to the industry when they begin to see themselves represented in its products. *Horizon Zero Dawn* and *Battlefield 1* dispel the archaic belief that games won't sell unless they have a white male protagonist. Blizzard's *Overwatch* is a prime example of a game which has capitalised on the rich diversity of its cast, and this in turn gives an impression of the values that the studio, and by extension the industry, hold."

OPM's Adcock beautifully sums up with one simple question: "Developers aren't making games just for men in the UK, so why on earth would they just hire men from the UK?" ■

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# DRIVERLESS CARS

**Jem Alexander** speaks to Ivan del Duca, technical director at Milestone, about the potential for neural networks to vastly improve the artificial intelligence of computer-controlled racers in driving games

Science fiction is nothing new when it comes to video games, with titles like *Mass Effect*, *Deus Ex* and *Destiny* among some of the industry's most popular brands. But one aspect of sci-fi has been sadly lacking from the world of interactive entertainment; neural networks are quickly becoming science fact but have been woefully underserved in the development of video games. Italian developer Milestone is looking to change that and has invested in an internal research and development team to try to unlock the potential of driverless cars in the racing genre.

Ivan Del Duca, the studio's technical director, has strong views about the use of neural nets in creating its upcoming racers. "My opinion is that artificial intelligence will be very much discussed in the future. It will be the future of humanity, probably," he says. "Everyone is moving towards AI. I think that the gaming industry is a bit late on this train. Games are very complex, and so I understand why we are late, but it's time to move on with this kind of technology.

"For racing games I think this is an ideal starting point, since we have AIs that are driving cars in the real world. Autonomous vehicles are already a reality, so it's obviously possible to do it in a video game."

This internal team devoted to neural nets and advanced AI is not something the studio expect to see results from soon. It's an investment in the future.

"We are still experimenting, it's a project that will last two years," says Del Duca. "The biggest problem that we are facing is the training cost. It is still very high. We have amazing results, but to train an AI on a specific track still takes weeks. It's just like training a dog.

"We are trying to optimise the process to be able to train the network in maybe a day or even less. Currently we are experimenting with solo driving, with just one car on the track. We are using a Deep Deterministic Policy Gradient network. It's very complex, but basically it's a network layered like our brain, so it's trained just like our brain. This agent (the AI networks are called agents in a world) is put on a track and the only methods this agent has to control his actions are by steering and pressing the throttle, etc. Simple actions."

This set of simple rules allows the agent to make basic decisions in order to reach its goal. In this case, finding the fastest route around a track. When it does so, just like a dog performing a trick, it will receive belly rubs and a tasty treat. Or the AI equivalent of one.

"The reward function gives a treat to the agent when driving well, on the racing line, with good times," explains Del Duca. "It's like a game. You give the AI points. Some plus points if they do something right and minus points if they do something wrong. At the end of the epoch, the process of training an AI, the rating of the AI is calculated based on the points they have obtained. There is a system, called back propagation, that corrects and recalibrates the errors, training the weights of every neuron inside the network."

Of course, just like a puppy on its first day of training, artificial intelligences start out peeing on the carpet and chasing their own tails.

"At the start, the AI is totally stochastic so it goes everywhere and it tries to understand what's the right

approach for racing on the track," Del Duca continues. "With a complex system of reward and recalibration the network learns to drive on the track. We now have some agents that are very good drivers on some tracks and they also powerslide and take advantage of all the characteristics of the vehicle they drive, but we have still to introduce the opponents. This will be a very hard part. There's nothing ready to be put in a game right now, but there will be in the next ten months or so."

## WHY NEURAL NETWORKS?

This may all seem like a very long and complicated way to achieve something that driving game developers have been able to achieve for a while now, but Del Duca insists that the benefits will vastly outweigh the time and cost investment. "There are several benefits," he explains. "Firstly, we are amazed by the results. The normal approach to AI in racing games is a juristic approach. We have a complex problem, but it's so complex that we have to simplify it and try to understand what must be solved, what can be approximated and so on.

"Usual methods on artificial intelligence is that the actor knows the racing line and tries to follow the racing line. We had some rules, for example if there's someone in front of you that is slower than you, you can calculate what to do when you approach it. If the actor approaches a car within two seconds it can try to overtake it but if there's a bend in 500m, it shouldn't overtake because it can be dangerous, and so on. It can be very complex. It's composed of hundreds and hundreds of rules that aren't always right.

> **To train an AI on a specific track still takes weeks. It's just like training a dog**
>
> *Ivan del Duca, Milestone*

"This means that we can't always obtain the results that we want. Especially for group behaviour. So if the AI is running alone, it's one thing that's simple enough, but when there are many bikes in a group, they need to think about different strategies like the driver behind you or trying to overtake the one in front of you by running a bit outside the track. But it will never be a natural behaviour. It will always be behaviour that follows some rules."

But these rules can always be gamed once the player (or creator) understands how it thinks. One of the beautiful and curious things about neural networks is that behaviour can evolve and suddenly the teacher becomes the student.

"AI can be unpredictable and this is the main benefit," Del Duca says. "If we are able to train an artificial intelligence to behave in the best way, it will decide what the best approach to a situation will be without us knowing why they decided this. This is fascinating and this is our main target right now. We have AI designers that continuously ask for new features: 'We want to support the slipstream in this way, or this other way, in this game it works, but in this other game it doesn't work', and so on.

"In the future AI will take care of everything. It's a bit like the artificial intelligence used for the translations that Google is using, for example. It learns autonomously to make translations without someone inputting text or inputting variations. You leave it there and after six months it translates text way better than six months earlier. The forward learning approach is, I think, the way to go."

Theoretically, this learning could continue when it's in the hands of the players, meaning that the game's AI drivers continue to get better even after launch. Though this could lead to some kind of racing car Skynet and spell the end of humanity as we know it. Perhaps not that extreme, but it's still not something the industry is quite ready for. "It could continue to learn post-launch," Del Duca says. "But I don't think this is something we want, because it would change the gameplay, basically. It would be too unpredictable. Also the learning process is very consuming in terms of CPU, so we have clusters of CPUs that train the AI because it's thousands and thousands of laps and experiences." ■

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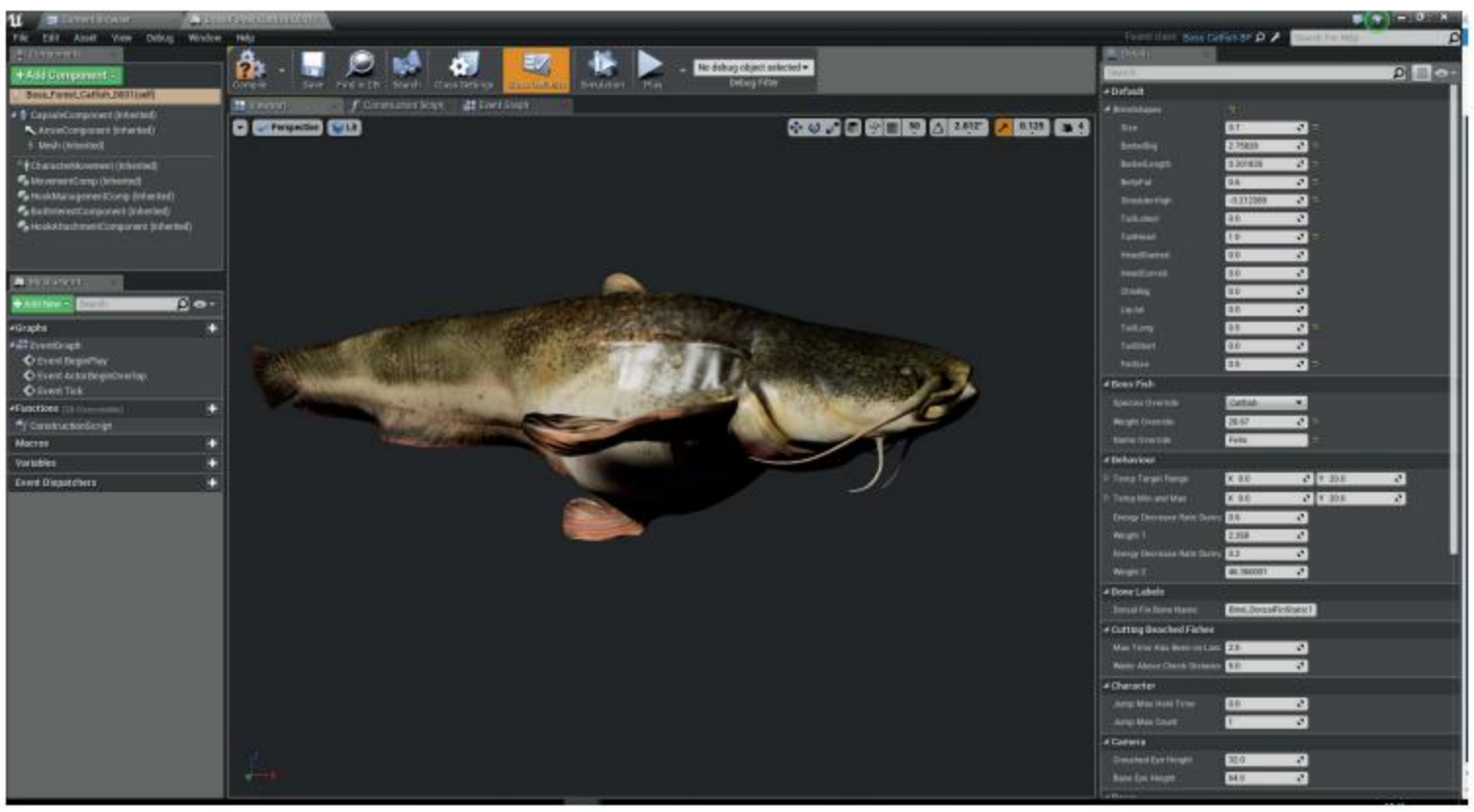
# RECREATING REALITY

**Rob O'Farrell,** senior vice president of development at Dovetail Games, takes us behind the scenes to show how the simulation specialists recreate reality in titles like Euro Fishing and Train Sim World



**What is the first port of call for Dovetail in the simulation development process?**

It's always important to us to know we can do the subject matter great justice for our players. Can we be authentic with the license, can we do correctly detailed research, and can we build the content in the way our players rightly demand?

Once we have those things fully examined and understood we move into production, with a clear and constant eye on what our players will want most. Regardless of skill level, our players have to be in a position to enjoy our sims and while we are as authentic as possible, we are still simulation entertainment.

**How much access do you get to real life machines?**

We get great access to both trains and planes, as well as having product specialists both within the company and as external consultants.

We work directly with locomotive operators to get the support and access, and often work far into the future, securing research when a train is available and storing it for use at a later date. Understanding how a machine works is critical in recreating that experience and little nuances become crucial – from a gauge, dial, or even a lamp – we need to know what it does.

Our audio team also goes to extraordinary lengths to get as much reference as possible by strapping microphones all over a train, including right down underneath. Attached to areas near the wheels, right next to engines and motors, next to exhausts and so forth.

With fishing we have strong hobby anglers on the team and also work with a fish behaviour expert who is a lecturer that specialises in Fishery Management. It's that sort of access that allows us, alongside our own fishing trips, to bring the correct and authentic experience to *Euro Fishing*.

**How do you make sure you capture places perfectly?**

We use a variety of different reference sources, but one of the most valuable is sending someone from the team out to tour a route in person and take lots of reference photography. It doesn't matter where in the world the location is. We've sent people to the USA, France, Canada, Germany, Spain, Austria – we go and get what we need.

They always come back buzzing and, empowered with all that knowledge, they get to work replicating what they have seen.

For *Flight Sim World*, we get real world data from companies like Jeppesen for aviation related data (runways, position of various navaids, etc) or from HERE for vector data (roads, rivers, etc.), which we then edit to fit into the simulation.

**What tools do you use to create these experiences?**

On *Train Sim World* we start with SRTM 30m terrain data to form the initial landscape, then using all the technical documentation we can find such as track gradient profiles and combined with the *Google Earth* overlay, we lay the track for the route using our own tools that we have built.

Once the track is down, our art teams start using 3DS Max, Substance and Quixel to create the 3D assets

> **We've sent people to the USA, France, Canada, Germany, Spain, Austria – we go and get what we need**
> *Rob O' Farrell, Dovetail*

which will populate the route and our content teams begin placing them, 1km square tile at a time.

Our gameplay designers use new tools we've built such as Simugraph™ inside the UE4 editor to set train services up, assign tasks to the player and bring the whole world to life.

For *Euro Fishing*, we have created a bespoke tool within UE4 that allows us to generate fish procedurally. We use UE's material's to create a system that combines textures and scale patterns together to create the fish that you see. We also combine different 'blendshapes' in order for the shape of the fish to change whenever a fish is spawned.

**How many staff do you have working on the projects?**

We have over 80 internal development staff, plus a wealth of subject matter experts and contractors. We encourage knowledge and technical sharing across the teams especially on our UE4 simulations so we can share tools and new functionality.

We form a core team around each sim and then there is plenty of flexible secondment to those teams.

**How passionate are your developers?**

Passion is important for developing your craft. We naturally attract staff who care a great deal about trains, fishing or flight – and that's obviously extremely important to us.

However, a combination of the right people with the right skillsets (including subject expertise) deliver great simulations. ■

**Location:** Chatam & Stirling
**Best Known For:** Euro Fishing, Train Sim World, Flight Sim World
**Web:** www.dovetailgames.com
**Twitter:** @dovetailgames

# CLIMAX STUDIOS

FOR OVER THREE DECADES, CLIMAX STUDIOS HAS BEEN PUSHING THE BOUNDARIES OF GAME DEVELOPMENT FOR ITS CLIENTS AND ITS OWN IPS. THIS IS THE CLIMAX STORY

## HISTORY

Climax was founded nearly 30 years ago by Karl Jeffery, and is based in the coastal city of Portsmouth, on the south coast of the UK. In the early years the developer successfully ported and developed some of the most popular franchises from PC to consoles, including Blizzard Entertainment's *Diablo* and *Warcraft II: The Dark Saga* and Bullfrog's *Theme Park World*.

Climax Studios built a reputation of being at the forefront of new

technologies, which continues to this day. Five developers worked on *Battlezone: Rise of the Black Dogs* for N64, we did the usual sleeping on or under desks, had marathon drinking sessions and a mountain biking circuit in the stairwell! We were bowled over when the huge arcade machines arrived for *San Francisco Rush* – we played them non-stop for days between power outages!

Having been fortunate to forge great relationships and work on world-renowned franchises early on, this stood Climax Studios in good stead for the future.

## NOW

Climax has continued to grow over the years and started creating it's own IP; the first of these was *Sudeki*, published by Microsoft. At a time when Wii games were struggling we developed *Silent Hill: Shattered Memories* for Konami and implemented the Psych Profile, which was groundbreaking at the time. We also worked on unusual and innovative AR projects like *Eyepet & Friends*, that let players toy around with 'living' pets & Sony's *Wonderbook: Book of Potions*.

## THE FUTURE

Climax's market lead and company recognition continues to give us access to new hardware before it's announced, let alone released; we had launch titles on Daydream, Gear VR and ARKit enabled iOS devices most recently with *ARise*. We have released innovative and award winning games that have used new technology in combination with hardware platforms to create new IP.

We continue to be laser focused on big budget, high quality console franchises partnering with many talented, high profile teams around the world. We have also continued to work with middleware vendors to help develop their engines.

As a technology led company we continue to be at the leading edge of new trends and ideas and work with publishers and IP holders to develop world class entertainment ■

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# DEVELOPING FROSTBITE

Tom Waterson from Frostbite Physics at EA Guildford tells **Sean Cleaver** how the studio works with EA's many studios to provide high-quality physics for its game engine, and the history of the team

**Tell us a bit about the set up for Frostbite in Guildford?**

EA has a very nice office in the centre of Guildford. It's been recently refurbished and has a swanky new café as well as an on-site gym. Of the three hundred plus people working here, the largest group is Criterion, an amazing game studio that have most recently been delivering epic space battles in the *Star Wars Battlefront*. My team is the Frostbite Physics team. We are around 20 developers working on bringing industry leading physics technology to all EA games.

**How has the Guildford office played its role in the development of the Frostbite engine?**

First, I should go a bit into the history of my team. We started out working down the road as Criterion Technology developing RenderWare, which was a graphics middleware technology used in many Gen 2 titles. After acquiring the IP of the physics middleware company MathEngine in 2003, we set about creating a RenderWare Physics product. It's first use came in the Criterion shooter *Black*, released in 2006. By that point Criterion had been acquired by EA and our fledgling physics group became part of EA's central technology team making EA Physics.

As part of EA we started looking for teams who wanted to improve physics in their games and we found a great partner in the *Skate* team who really wanted to push the boundaries of physics based gameplay and animation.

Then along came Frostbite, the game engine that was developed by the DICE studio initially for their *Battlefield* franchise. It was so successful that other teams around EA started using it as it was a fast track to improve quality and to make their development easier and faster. It was used first outside of the DICE studio for *Need for Speed: The Run*, then by BioWare for *Dragon Age Inquisition*, and has now spread to sports, with *FIFA* and *Madden* recently making the transition.

> It's a pretty exciting time to be in the Frostbite physics team
>
> *Tom Waterson*

With Frostbite being used by most of EA, we wanted to integrate our physics technology into it. Frostbite originally had a team of physics developers, who were working out of the DICE studio in Sweden, responsible for integrating the Havok physics engine as well as developing destruction for *Battlefield*. With the plan to bring Frostbite to all of EA, we joined forces with them and took up the name Frostbite Physics.

Our team has expanded to include development of mesh processing technology, which is used for many aspects of content creation, including automatic generation of simplified meshes for different character levels of detail, and we have also taken over some of Frostbite's AI technology.

**What skills are you looking for?**

Our team has a good mixture of people, some direct from very academic backgrounds, including a few PhDs (I have a PhD in string theory myself) and some talented people who joined us from other parts of the industry. As a team, we do require skills in physics simulation and algorithm development, but a big part of the job is developing robust, easy to use libraries and tools.

We're looking for smart, passionate software developers who are able to work with our team to create cutting edge physics technology and build tools that make it easy for developers across all teams in EA to unleash the power of physics in their games.

**What kind of challenges do you face working on Frostbite?**

The biggest challenge we face is finding a good balance between supporting the game teams at EA, maintaining a stable, robust technology platform, and the need to innovate, making sure we are also looking ahead to keep Frostbite Physics at the cutting edge of physics technology in the games industry.

We have to be both responsive to the current needs of the game teams, and look ahead to what is going to be needed in years to come to make the games of the future. We have to be looking maybe five years ahead when we're thinking about developing the next physics technology.

Another big challenge is communication. EA is a huge organization, with studios all over the world. The Frostbite team has offices in the UK, Sweden, Romania, Canada and the US. We have to be able to coordinate development across all of the game teams around the world to integrate our technology.

**How do you see the Guildford site's role growing?**

We are scaling up our team to be able to support those Frostbite teams and to make sure they have the best available technology.

At the heart of this is physics. This is not just game physics, as people understand it, it encompasses everything from clothing, hair, facial deformation, fluid simulation and procedural character animation.

We are working hard to create characters that are indistinguishable from real life and we're developing technology to make environments come to life, with destruction, interactive vegetation and fluids, all at an epic scale. All in all, it's a pretty exciting time to be a developer in the Frostbite physics team. ■

Location: Guildford
Web: www.ea.com/frostbite
Twitter: @FrostbiteEngine

# THE DEVELOP GAME JAM

**Sean Cleaver** catches up with Dan Parkes from Artist Wanted and Dimitri Zangana of Green Cyber Witches to find out the highs and lows of Develop's Game Jam at this years Future Games Summit

During the recent Future Games Summit, we held the Develop Game Jam, sponsored by YoYo Games. Open to all, the jammers had two days during the conference to create a game based on the theme of 'Man vs Nature'.

The winning team, Artist Wanted (comprised of data scientist Dan Parkes, student software engineer Tudor Gheorghe and programmer Hein Bo) came together as single entrants and not only had to learn to work together very quickly but also had to learn how to use new tools just as fast to create *Us Tree*.

"Our team, Artist Wanted (because we were composed of three people with little to no art skill), got together on Discord before the jam and had a quick idea session," explains Parkes. "I liked the idea of playing as a tree against humanity. Tudor thought an arcade-style game would be good. Then we thought a multiplayer game that can be easily played on the couch would be cool.

"Then, Tudor had this spark: What if it's a co-op game where 2 players have to take control of this tree, one controlling the left side and the other controlling the right. If both players moved against each other, the tree wouldn't move. If they worked together, they could move twice as fast. From that, *Us Tree* was born!

"Now with two heads, the tree must survive against waves of evil humans with flamethrowers, gasoline, rocket launchers and never-ending arsenal of forest finishers. The two players can run around defeating the human onslaught with their own weapons: Razor Leaf, a Solar Beam, the Acorn Shotgun and, my personal favourite, the Squirrel Pistol. Although we didn't manage to get enemies to be killable (we didn't get collision detection in time), the aim of the game was to survive as long as possible, with difficulty ramping up quickly, like in *Super Hexagon*. Short sessions of 20 seconds on average was the objective."

For Green Cyber Witches, the game they created was very much themed around nature. "Our Game *Yasei Run!* is an Asain-style endless runner where you would face many dangerous challenges," explains Dimitri Zangana.

"From forests to snow mountains and other seasonal changes as the player progresses forwards. You will also encounter enemies such as monkeys and obstacles like foxes that you need to jump over."

## TEETHING PROBLEMS

Developing a game in a short space of time is always a difficulty, but one that the game jam contestants were equal to. Despite a few setup issues.

"We were asked to use GameMaker Studio 2 for this jam," explaind Parkes. "None of us had used it before but that didn't bother us. It's always good learning a new engine on the fly!

"The biggest struggle was source control. We set up a GitHub repo for the project ahead of time and this was working great. We started working simultaneously on the project and we came to merge our stuff together and we got merge conflicts. Solving this meant losing an hour or two of work, as well as taking time to actually resolve the merging.

> **It's always good learning a new engine on the fly!**
>
> *Dan Parkes, Artist Wanted*

"Also, the Future Games Summit had some great talks going on so Hein and myself did jump out of the jam for bits to listen to those talks and panels. The keynote from Russell Brower was really good, but that, along with the networking afterwards (which I think is essential to do at these sorts of events), meant we lost another few hours of development time."

"If we didn't lose that precious time, we might have got enemy collision and a score system in and actually have a game that was playable by the end of the jam," laments Parkes. "Alas, it was not meant to be!"

"We all really enjoyed the game jam," said Zangana. "We were really satsifed with the content we created in just under two days. The jam was very organised and allowed us to meet many professional bodies."

## CONTINUING DEVELOPMENT

The teams had such a positive experience that both Artist Wanted and Green Cyber Witches are continuing to develop their projects away from the competition. "We all feel that we have created something with great potential," says Zangana. "Although there are many endless runners out there, we felt that with our core mechanics, art style, sound design and music, we could create something truly unique."

"I thought it was an incredible experience," Parkes reflects. "I was very lucky to have been paired up with a couple of talented programmers so we developed ideas quickly. The way the time pressure focuses the creative process is remarkable. It was also nice to learn GameMaker Studio 2 during this jam as well. It looks like a very powerful 2D engine. I think I would also try and cut ideas sooner." ■

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# LIVING GAMES

Jagex is looking to become the home of living games, an evolution of the live games as a service phenomenon that is enveloping the industry. **Jem Alexander** speaks to Phil Mansell, studio CEO, to discuss

The promotion of Phil Mansell to CEO at the beginning of 2017 marked the start of a new era for Jagex. The studio has reinvented itself several times over its 17 year history and Mansell jokes that he reigns over the Third Age of the company. And as all Tolkien fans know, the Third Age is always the best age.

Over that time one thing has remained constant: the ongoing success of *RuneScape*. Mansell plans to continue this, but the future of Jagex will diversify with a new focus on being the home of 'living games'. This new direction for the company came from extensive market research and analysis after the studio was purchased by a Chinese company.

"I was made CEO at the beginning of 2017," Mansell explains. "It was a great point for all of us, not just our Chinese purchasers, but everyone at the studio to really assess what we wanted to do as a company. Because our new owners were saying 'This is great, but where are you guys going next?'. Which is an awesome situation to be in. So we did a good amount of introspection, but we also looked out at the market as well. What do we think we're good at? What do we want to do in the future, and how does that map to trends in the market?

"What came out of that was insight about ourselves as well as what the market was doing. To really distillate them down, the market insights told us that it costs more to make games with every year that passes. Even the quality of indie titles now is crazy, let alone where you see triple-A games going. It's incredibly expensive to stay competitive. What that means is, if you're going to survive and be competitive, you need to capture as much value and revenue from your users as possible.

"Over the last five years traditional games publishers have more and more moved to live games. Obviously people like us have been doing it a long time, but now you see, for example, *FIFA Ultimate Team*. *FIFA*, one of the most stalwart, traditional games, being almost completely rebooted with a free to play, collection, gatcha, panini sticker model. Post-*Clash of Clans*,

everything is social. All of these things are adding up."

## BEYOND LIVE GAMES

This shift in the industry is becoming practically ubiquitous. To the extent that there is an outcry lamenting the 'death of single player games'. Things are perhaps not that drastic yet, with the likes of *Mario Odyssey*, *Zelda: Breath of the Wild* and *Horizon Zero Dawn* selling very well in 2017, but there's a large, hungry percentage of gamers who are desperate for more *League of Legends*, *PUBG* and *Rainbow Six: Siege*.

"The other thing we realised was that players are on this trip as well. We all feel it anecdotally, but there's a lot of analyst research that backs it up. Players are putting more time and more money into fewer and fewer games. I feel it as well and we see it from our players, you want the game to give you something back. You want the game to recognise your time investment, you want it to help you make friends, to give you lots of cool things to play with.

"On the player side, you've got that demand. I think that's why you're seeing the rise of live games. Over the last two or three years, everyone's been talking about it. But certainly over the last five years the foundations were laid. EA has it as its main strategy, Ubisoft has it as its main strategy. The more core gaming parts of Activision have it. And then if you look over at China at Tencent and others, that is their business.

"For us that was really interesting, there's this wave that is progressively moving forward. We've been in that race and we've been innovating in our own way here and there, we're one of the first UK devs to build a proper broadcast studio in our office. We do livestreaming, we sponsor esportsy kind of events, we try to do competitive gaming with MMORPGs, which is a bit weird, but we've figured out a massively accelerated way for 2,000 people to compete for a grand prize. We've found a way to do that."

With all this market research, Jagex started trying to figure out ways to position itself less as just another company investing in the live games trend, but instead leapfrogging into the evolved version of the phenomenon. It's solution? Living games.

"There's live games, but if you can push it, then you're into 'living games," explains Mansell. "That's the next level. That's the way we're describing it and that's aspirationally what we want Jagex to be. The home of 'living games'. So if you are a player – and there are a lot of players who want this kind of experience – you know you can come to see what Jagex has to offer.

"We've not got there yet. We've got quite a lot to do. A very small number of other companies are pushing on that wavefront as well, but there's no one else who is specialising in it, I don't think, and we think that's where we can really focus. Building the skills ourselves."

## FIVE PILLARS

According to Jagex there are five key pillars for creating living games experiences and they are all areas where the studio has been building its expertise since the launch of *RuneScape*. But areas that need to be taken to the next level.

"So that was in our head," Mansell says. "How do we not only adapt, but jump the queue? How do we get to the front of that wave of live games that's going ahead? And that grew into our aspiration for living games. The idea that if you look at what people would call a live game at the moment... For some people that's how they market it, maybe being more digital first, using influencers, and so on. For devs, maybe it's having updates to the game. Having social features. There's a wavefront of what is accepted as a live game. We said 'This is our thing, we want to really lead the market on it'. So how do you push each of those to the next level? That's become our credence.

> **Players are putting more time and more money into fewer and fewer games**
>
> *Phil Mansell, Jagex*

"We have five pillars of that. The first is designing a game to be evergreen. It's a different mindset if you're a game designer. Really thinking about a game that is fundamentally inexhaustible. You have content and you have systems that can go on indefinitely, but still have depth and satisfaction for players."

"Then there's having really meaningful social features. Not just asynchronous trading of items, but talking with people, making friends, having rivalries. The emotional connection that keeps you coming back. Because you want to talk to these people, they're part of your social circle. It's been around for a while in MMORPGs, but it's starting to proliferate out. There's more design thinking around making that work.

"Then there's keeping a game that feels truly alive, updating it all the time, where things are constantly different in the world. You're not just waiting for a monthly content drop. Making it feel like a world that is alive.

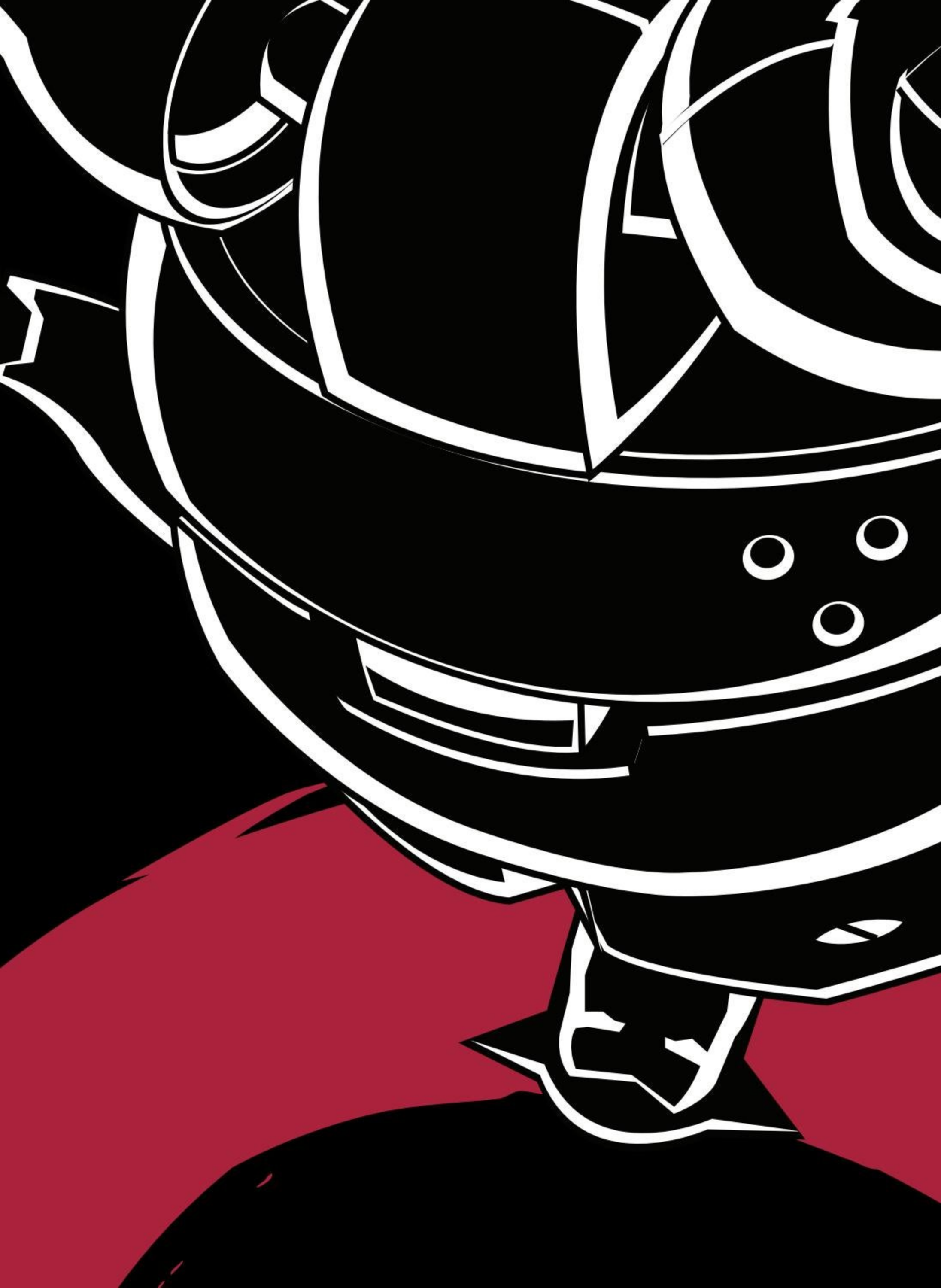
"There's also the idea that in order to foster a community, you first of all give them a real say. That's also a bit of a change in thinking, being more customer centric. We pushed the boundary on that with our old school *RuneScape* game. We need a majority vote for any change to the game.

"Anything that's not a bug fix. If we haven't got a 75 per cent voting majority, it doesn't go in the game. That's pretty radical. And that's a relatively conservative game, so our constitution matches that. But we use it in all the things we do, whether it's surveys, players visiting us, our user insight and analytics. Really understanding the player and giving them a voice is part of this credence.

"The final thing is accepting that the community that you're fostering shouldn't just exist in your game. Whether they're making content about your game and it spills out onto the internet, you need to support that in a way that's really about what the player's doing. That can go all the way into running real life events. We run big player gatherings at our office, we do them around the world, we have our big annual fan convention in London which we did in September, called Runefest. Thousands of players come, all of our staff come, we tell them about what's coming, they all have a massive party. There's a few other MMO companies that do that."

All of this is relevant to *RuneScape* specifically, and that's where Jagex cut its teeth in these areas, but it's more important to the company's forthcoming projects, where they'll be developing these living game ideals from the ground up.

"We've got a next-gen MMO that we're in the early stages of building," says Mansell. "And we've got what we call our Workshop team, which is a fast, rapid prototype ideation group. That's coming up with loads of cool ideas. Some of those ideas we are working with dev partners to build out of prototype stage. You wouldn't be able to search for Jagex and find them, but we've probably got eight or nine games with active work being done on them." ■



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# PLAYING WITH IP

**Jem Alexander** speaks to Ubisoft Milan's Dario Migliavacca and Davide Soliani about the role of passion in development and working with Nintendo on Mario + Rabbids Kingdom Battle

*Mario + Rabbids Kingdom Battle* went from ridiculous rumour to laughable leak to one of critics' favourite strategy games of the year faster than you could say "It's-a me!". This bizarre amalgamation of disparate worlds should, according to everyone who heard the rumours and saw the leaks, have been dead on arrival. And yet, here we are.

Boiling together two intellectual properties to create an honest-to-goodness love serum isn't an easy task, nor is it an opportunity that comes along every day. IP licensing is a notoriously strict area of the law and companies are understandably very protective of their universes. Like jealous, greedy gods.

So when Nintendo approached Ubisoft to build a playground in which the *Mario* and *Raving Rabbids* characters could all frolic together, it was an opportunity that came with astounding pressure.

"It started with a very simple mandate," says Ubisoft Milan managing director Dario Migliavacca. "We had to propose a concept with *Mario* and *Rabbids*, that's all. That's only possible because of the great relationship between Ubisoft and Nintendo over the years. It was a huge challenge put in front of us. Personally, I was sure that only a few people could have been able to achieve that and I strongly believed in Davide [Soliani] and his team because..."

"Because I'm a nerd," Soliani cuts in. "Exactly," continues Migliavacca. "Because of his huge Nintendo knowledge and passion. I trusted in him, even if I knew it was a dream – sometimes we refer to it as an impossible dream – but it worked. The initial mandate was really simple." He repeats himself. "Simple," he says, making bunny ears with his fingers. Or should that be rabbid ears?

"No-one knew the genre or the story," Soliani adds. "They just had this fantasy offer to unite these two different universes."

## TAKING THE LEAD

It's a great honour for a Ubisoft studio to be given the reins on a new project. Some, like Ubisoft Singapore and its new project *Skull And Bones*, build an IP out of years of working on tech (water and boats for *Assassin's Creed* in this case) before it happens. There was no precedent on which to build a game design in the case of *Mario + Rabbids*; such a mandate had never been given before.

"For us it was different because there was a big question mark, which was Nintendo," says Migliavacca.

"It started with a very small team, prototyping and inventing everything."

Playing with other people's IPs is always daunting, but never moreso than when it's a household name.

"It's a big opportunity," says Soliani. "But this big opportunity was Mario, which is probably the most well known character in the video game industry. And being someone who grew up with Nintendo games and Miyamoto games... For me the guy is a legend. It was not easy because I had to present the game to him and other people inside Nintendo and, even if I felt strongly about my Nintendo knowledge, and even if I was using common sense to propose something, it wasn't easy. It was very stressful, because we were trying to show something to them that was the same quality and level of polish, but with a twist. Some craziness on it."

When your childhood hero is asking you to reinvent the very games that led you to a career in the industry, it's bound to be unnerving.

"This is something that Miyamoto told me that he was expecting. 'Show me your colour,' he told me. 'Show me how far you can go. I want to see something different.' Knowing that he was expecting something that would surprise him, it's not so easy to live with. It's a goal that can overshadow you easily. I would say that I was in front of this IP with a lot of respect, but also with the strong will to show my perspective."

Presented with this task, it's easy to play it safe. To not try to rock the boat too hard, in fear of tipping the whole thing over and losing access this world to which you've been gifted. Something Soliani railed against, determined to both surprise and delight Miyamoto and co.

"If I learned one thing working with Nintendo it's never to restrain yourself," he says. "It's always better to dare. Worst case scenario, they say no. But at the same time they want to be surprised. Otherwise they will make the game themselves. So they really want you to try. Of course if you go to them and propose something completely out of the box and vulgar, this would be stupidity. But if you propose something surprising, even if it's very odd, they will take it into consideration. As long as there's a good reason or logic behind it.

"So now I never restrain myself. The phantom, the third boss in the game, I had been waiting twenty years to make this boss battle.

"The whole idea started with the phantom trying to piss off *Mario*, and I said 'They will never say okay to something like that', but in the end they did. So it's always better to try."

## PASSION

Again and again, Soliani comes back to how his passion for Nintendo's franchises is what allowed him to succeed at this daunting task. But at Ubisoft Milan Soliani is also surrounded by other games fans. Those who got into the industry because of their love of gaming.

> **If I learned one thing working with Nintendo it's never to restrain yourself**
> *Davide Soliani, Ubisoft Milan*

"We're not very formal as people in games development," he explains. "For example, in our brainstorming sessions we don't care if you're a designer, or an animator or a programmer. We want people participating. What we do normally is have a mixture of people. Yes, in the end I will guide and direct everything, but I don't care if a designer is telling me 'What about this?' and his idea is better than mine, I will say 'Yes, let's go for that'.

"We are completely open. The animators were autonomously proposing creative situations, such as Luigi dabbing, which spread all over the internet. I think that we are encouraging this mood where people were not afraid to propose something. It's a very hard working environment and I'm asking a lot of people. I'm not saying, 'Take your time'. No no no. I want them to really work. That's why we are trying to find people with a lot of passion. A holy flame burning in their chest. I want them to ask more of me. We are encouraging that."

With years-long development cycles, however, it can be easy for that flame to falter. Is this something that can be prevented? And if so, how?

"I don't know," Soliani admits. "I have goals in my life that I would like to fulfill. Even if they sound totally crazy, I always work to make them possible – and this is one of those dreams. *Mario + Rabbids* is definitely something that, even talking about it four years ago, I would have laughed about one day being real.

"But the first thing that a designer or someone working in this industry should learn is about receiving criticism. That's the hardest thing to learn as a designer. Not going to an academy, not reading a book, not knowing how to use the tools, but accepting criticism. If you finally achieve learning that, the rest is so much easier." ■

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# GAMES FOR EVERYONE

**Jem Alexander** speaks to Ovosonico's Massimo Guarini about catering to a larger audience, developing more personal experiences and delivering messages through games

Massimo Guarini is an Italian industry legend. A veteran with almost 20 years of making games under his belt, he founded Ovosonico five years ago in a quest to expand the interactive entertainment audience. He argues that the development community and gamers are stuck in a vicious cycle of creating the same games over and over, simply because they have proven to have sold in the past.

"I very much felt the pressure in my career from the industry itself to rely on traditions and a very conservative approach to things," Guarini says. "Things are going to be done this way and you should make an FPS, and that's it. It's an FPS, the rules are already there, you just have to be a bit more polished than the other guys. There's no real desire from the industry to challenge these things.

"There are people in 2017 who say 'I hate video games', which makes no sense at all when you think about it. Can you say that about music? Without sounding stupid? No, you can't. What the fuck are you saying? You can't say you hate music! To me that was really striking and this, combined with my personal frustration at that point of my career where, at a certain point, I felt inept. I felt like I'm not fit for this. I felt like I was the problem. I felt like I wasn't a good game designer any more. Like I should change my job and do something else. Without really realising that it was probably the industry – the market was not catering to me anymore. The problem wasn't me, it was the market, it was the industry."

This pressure to recreate, reiterate and clone the same games over and over pervades the entire industry, even as technology advances.

"I don't want to feel this pressure where if you make a platformer, either you make something like *Mario* or you're shit," Guarini explains. "I still

love Nintendo games, don't get me wrong. To me the problem is never what we *have*, but only what we *don't have* on the market. I love *Mario* games, I love Nintendo, but I got a little bit emotionally detached from that approach. I love *Zelda*, I still play *Zelda*, but it's basically been the same game for thirty years. I don't want to remake *Zelda*; it already exists.

"I want to try to approach the thing from different perspectives, more personal ones. I shouldn't be shy anymore and force myself to do things that I don't feel are my own or that I don't feel comfortable with. My emotional range has changed, I'm not 20 years old anymore so, my emotional response to things that got me excited at 20 years old is different."

## THE LONG GAME

Guarini's mission to diversify the output of the games industry and expand the audience isn't going to be completed overnight. He knows it will be an uphill battle in the short term, but in the long term he sees it as an inevitability.

"I think we should be more open minded in terms of what we do and for whom," he says. "But being open minded is not something where you say 'Let's be open minded!' and it suddenly happens. It's more about expanding the audience, expanding the market so that the diversity of the audience automatically supports the diversity of the content."

This can only happen when games become truly accessible. Not just in terms of gameplay, but technology.

"You remember MP3 players before the iPod?," Guarini asks. "They were cool, they were super rich in terms of features, but you had to be kind of an engineer to work them out. Encoding MP3 back in the day was quite difficult. Then Apple and Steve Jobs came in and made a washing machine. The iPod is a freaking washing machine! One simple button. You didn't need to know anything about encoding, you just needed to own the iPod and iTunes and that's it.

"But, technologically speaking, it was probably about three or four years behind. It was nothing special. It was just a nice-to-have product. Simple enough for people to jump into this technology without knowing what they're doing. And that's still not the case with video games. Technology becomes really mainstream whenever people use it without knowing what it is. You don't need to know how it works, or why it works, you just need to press a button and *it works*. It just works. And we're so far away from that in terms of gaming right now.

"If I wanted my mother to play my game, oh god, how would I explain to her how to buy a PlayStation 4 – which model, by the way? That's true for any console. How to connect it to the TV, how to create your own account, download the update, connect to the store, create another account probably, insert your credit card details, browse an incredibly difficult store and buy a game. Oh, good luck."

## GAMES WITH A MESSAGE

The ultimate goal is to create games that carry a message. Something personal that connects the developer and the player. That's where Guarini's interests lie, and it's demonstrated in Ovosonico's latest, *Last Day Of June*.

> **To me the problem is never what we have, but only what we don't have on the market**
>
> *Massimo Guarini, Ovosonico*

"My mother, for example. Obviously she's not going to be thrilled by *Destiny* or *Overwatch* or anything like that, but she would probably play *Last Day Of June*, even if I wasn't her child," says Guarini. "Because it's a different type of content. So the day we remove the barriers, we're automatically expanding the audience, and then it's our responsibility as creators to make sure to cater to that audience. There's thousands of indie developers who already want to do their own stuff and deal with different subjects, so it's totally natural.

"For me the video game industry is still a very exclusive private club, which is cool, but it's also a bad thing in terms of global expansion. I feel like no one in 2017 should be able to say 'I hate video games' without sounding like an idiot."

Guarini hopes to have less of a disconnect between gameplay and story, so that playing the game is a form of storytelling in itself.

"I appreciate that a game rule is a game rule and if I jump I need to be jumping the same way all over the game," he explains. "I know how game design works, and that's why I want to challenge it. It doesn't mean that I have to break things, I just need to design things from different perspectives. You need to make sure that the mechanics that you use are consistent with the themes that you want to express. That's incredibly important and it's what we tried to do with *Last Day Of June*. We tried to build game mechanics around the theme, not vice versa.

"I don't like telling, I like showing. And I like making sure the player's brain fills the gaps. Because that way you will remember the experience more. So for me, I'll give you some dots here and there and it's up to you to connect them.

"I want the player to make an effort. *Last Day Of June* is probably one of those games that requires your attention. If you don't, you'll probably miss parts. You'll be able to finish the game, of course, but you won't enjoy it as much as if you put your full attention into it. It's like watching a movie while reading your freaking phone. Come on."

Despite the lack of a global audience on the scale that Guarini is hoping for, he was surprised by the reaction to *Last Day of June*. Even the hardcore *Call of Duty* and *FIFA* players seem open to playing something that connects with them on a deeper level than bullets and balls.

"We're all human beings after all," Guarini says. "Sometimes I watch a movie because I want to cry. Or I want to exercise my fears. I think it's the same with video games, it's just that people aren't used to it. It's not like gamers are aliens. We're the same.

"So it was an epiphany, but I was kind of expecting it as well, but probably not to that extent. So when I saw people playing *Call of Duty* and then playing *Last Day Of June* and saying 'Dude, you made me cry, you fucking bastard' on the internet, I was like 'Wow'.

"It's cool because he's a male teenage gamer and you know how male teenagers are. Arrogant or proud in terms of 'I'm not crying, I'm a man', but for a moment we were on the same level. And that moment is poetic. It's not me vs the gamer. No, it's just two normal human beings connecting with each other through something that expresses a personal message, that's the beauty of it." ■

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# INSIDE A **GAME ACADEMY**

**Jem Alexander** talks to Geoffrey Davis, general manager of the Digital Bros Game Academy, about how the school seeks to arm the next generation of Italian game development talent with real world experience

The world has seen a rise in video games university courses, with games design and art degrees an established sight at mainstream institutions. Alongside that, there are a smattering of specialist courses that seek to train students in intense, professional environments. Italian company Digital Bros, owner of global publisher 505 Games, has invested in the region by setting up one such academy as a way to foster local skill and knowledge.

"The main objective is to identify and train the next generation of development talent in Italy," says Geoffrey Davis, general manager of the Digital Bros Game Academy. "The idea that Digital Bros had in creating the academy was that there's a lot of creative value and talent that needs an outlet. The company started in Italy and there's something about giving back to the market.

"The games industry is essentially very country neutral – you can be anywhere in the world and make a game – why do we need to keep seeing, for example, Italians going to Santa Monica, going to Canada and even going to Finland, or Holland? Why can't they stay here?

"So we want to create that fabric, create that base. That's about investing. Investing in the market, investing in talent, investing in infrastructure and so on."

This means that people who grow up in Italy loving games can stay in their home country to find their dream job, bringing money into the country to boost the industry in the region. The majority of students who join the Digital Bros Game Academy do so out of a love of games, one which pushes them to fulfill the strict entry criteria.

"We start with people who have a very strong passion," Davis says. "99.9 per cent of them are hardcore gamers and they've got this passion. They've always dreamed of being on the other side. Usually they say 'I was playing this game, and I don't know why they designed it like that. I want to change that'. Those are the kinds of

people we accept. That's the profile. But they haven't necessarily had the formal training.

"Applicants go through a process where you write letters. You have a personal interview. We want to know what language skills you have. You have to give project work. And even if you've never developed anything, you have to try. We have a selection committee and we go through every single student. So to give you an example, this year we had 110 applications and we accepted 71."

## PERSONAL TRAINER

The reason for making sure people who apply *really* want to attend the academy is because of how difficult it can be. It's hard work, but you'll be given a huge amount of support by the trainers on site.

"We want to know you're going to be committed," says Davis. "It's not an easy year. It's emotionally trying. It's technically trying. You're testing yourself. We're testing you. We want talent and we'll do everything to help.

"To give you an example, we have students who are Skyping with our trainers at midnight. Working on a project and they can't get past a piece of code, so they send a Skype. We give them our emails, our Skype, our mobile numbers, we're there for them. We have a great team. That's a huge part of it. Very similar to developing a game. You need a great team."

With crunch a pressing concern throughout the industry, Davis is keen to explain that while they're teaching their students about the hardships of the industry, they're also trying to instill in them a sense of balance.

"It's a year program," he says. "We want to get them through in a year and they commit to a year. Do I think that it is healthy for a studio to stand on somebody's head and beat them? No, I don't. Do I think that there are some necessary long working hours? Absolutely. But you need a balance. So we teach that balance.

"For example, we have some people who are very, very focused and work very long hours. We sat down with them all, separately, and we said 'You need to go out and have a drink. Go have some fun. Go have a pizza. It will help your thinking process'. There is a responsibility for us, and the games companies, to have a wellbeing strategy. But that doesn't mean that you might not work 12 or 18 hours. If you're under deadline, you need to. And we see that with our students, but we prepare students for that, so they're ready."

> **It's not an easy year. You're testing yourself. We're testing you. We want talent and we'll do everything to help**
>
> *Geoff Davis, Digital Bros Game Academy*

## TOOLS OF THE TRADE

The academy teaches industry-grade tools that students would expect to use in a professional games studio, and the format of the year ramps up so that they're creating games early and often.

"After the first month you've already created a game with either a programmer or an artist," Davis explains. "Then it becomes three person teams, you've got an artist and a programmer and a designer. You've got bigger teams, and we just launched last week what we call The Big One. Our final project, or our thesis project, which will take them to the end of the year in April. So it's about a seven or eight month project. They are in ten people teams. We've assigned a lead project, a lead art, a lead design, a lead programmer. And then within those teams they negotiate who will be the level designer, who will do the gameplay programming. They have a milestone schedule. Our trainers are the studio directors, if you will. We have stand up meetings, we have a production meeting every morning, we have post mortems after our milestones, we turn them down." Just like in the working world, people make mistakes. The emphasis here is learning from those mistakes and giving and receiving constructive feedback within the teams.

"I think that we as human beings are not used to failing," Davis says. "I think that we are built to be successful. That's pounded in our heads. But studies have shown that actually those that don't make mistakes don't learn, and there's not one solution to every problem. We know they're going to make mistakes. We don't tell them that, but we know they are. We then do a lot of post mortem work to help them work through that. Either as a team, or as a whole community get together, where we talk about how a project went. We learn from each other. There's a lot of feedback sessions and they learn from one another. That's what it means to make a game. You're working together, you're communicating. Not being defensive about criticism. We're not born with those skills."

## GET INVOLVED

While the course is taught in Italian as its primary language, the school encourages guest trainers to visit and teach. A lot of specialist knowledge comes from these guest lecturers, but these aren't just fly-by-night visits. Guest speakers are expected to become part of the Digital Bros Game Academy family.

"One of the tools that is probably most important, in our view, is having a network. Almost everyone comes in without a network, so part of the deal of being a guest trainer is that you agree to be part of our network.

What does that mean? You have to leave your details for our students, and if they want to call you, or they have an idea or need some advice, or they're feeling low. 'How did you do it? Tell me your story', or they want to pitch something, or 'Can I work with you?' There is that agreement and we haven't had a 'no' yet. So students walk out with a stack of business cards. That's a big tool." ■

Any developers interested in moulding the Italian games industry of tomorrow can get in contact with Geoffrey Davis directly at **geoff.davis@dbgameacademy.it**

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# TRAIL BLAZING

**Sean Cleaver** speaks to Mike Cox, studio head at Scottish-based production company Blazing Griffin following investment in new facilities and a drive to increase its programming and design ranks

**Who is Blazing Griffin?**
Blazing Griffin is on a never-ending journey to craft new worlds and bring them to life in the content we create. Founded in 2011 as a digital game development studio, the company has grown to include a group of synergistic divisions spanning game development, film and TV production and end-to-end post-production services.

As an independent digital entertainment group based in Scotland, all three companies are working across the same projects from different angles, as well as projects and clients unique to each. As we continue to expand, the focus on cross platform storytelling and technology will increase as we balance creating our own new intellectual property as well as license IP for projects. Blazing Griffin has staff based across Glasgow, Edinburgh and London.

**What games has the company produced or worked on?**
Blazing Griffin is most famous for *The Ship Remasted*, the remastered version of the cult classic *The Ship*. The team released *Distant Star: Revenant Fleet* back in 2015 for which they won a BAFTA for best game at the BAFTA Scotland Awards. Other games include *The Nightmare Cooperative*, *Gentlemen!*, *Dino Tribes* and *APB Retribution*.

We have a host of releases planned periodically over the next 18 months, which I'm really excited about. It's an amazing time to be involved with the studio, anyone wanting to know more about it needs to come and visit and for anyone looking for a stable career, I'd love to tell you more.

**What kind of skills are you looking for?**
With the growth of the studio we are looking to strengthen our management teams, hiring additional leads who will have responsibility for projects. The successful people will be actively involved in the next phase of recruitment. As the studio grows so will responsibilities and seniority. If you are passionate about video games, want massive career growth opportunities, enjoy managing a team and would like the opportunity to remain hands on across multiple projects then you should get in touch.

Our priority is finding lead programmers, artists and designers. We also really want to hear from awesome technical artists and problem solvers with a can do attitude.

**Tell us about your new game development facility?**
With the expansion of Blazing Griffin our studio in Glasgow has doubled in size, the new game development facility taking over another floor of the old school house allowing the film and post production teams to expand also – exciting times! Remodelling the old school house aesthetically we have transformed it into a state of the art development studio, keeping the buildings personality, historical features and charms while adding all the modern facilities needed for world class development.

**What is it like working at Blazing Griffin?**
It is an awesome place to work. Every member of the team has the freedom to input and influence the style, tech and design of the games. The whole studio exudes this inclusive vibe, continually learning, expanding the development of both staff and the games in production.

New ideas are trialled in the weekly play through, allowing game aspects to be added and tweaked throughout development. We develop and publish our own titles, enabling a much broader scope to truly explore design elements, the tech in the game and creativity throughout the production cycle. Blazing Griffin are triple-I developers, part of a new breed of studios popping up around the world producing high quality Indie games – made to budget and a shorter development cycle to create rich entertainment experiences more frequently. Our current openings offer a unique opportunity to join a secure studio with bold visions and realistic future growth.

We run multiple projects, across several teams, with no crunch, a purpose built studio and an active social calendar.

**What's next for 2018?**
Blazing Griffin has been growing steadily, adding key members over the past six months. We plan to continue this growth throughout 2018 forming three full development teams to work on multiple projects, both original IP and from our existing portfolio. It is a fantastic time to become a Blazing Griffin and enjoy this next chapter with us.

We're working on an unannounced title right now and look forward to telling you all about it very soon! ■

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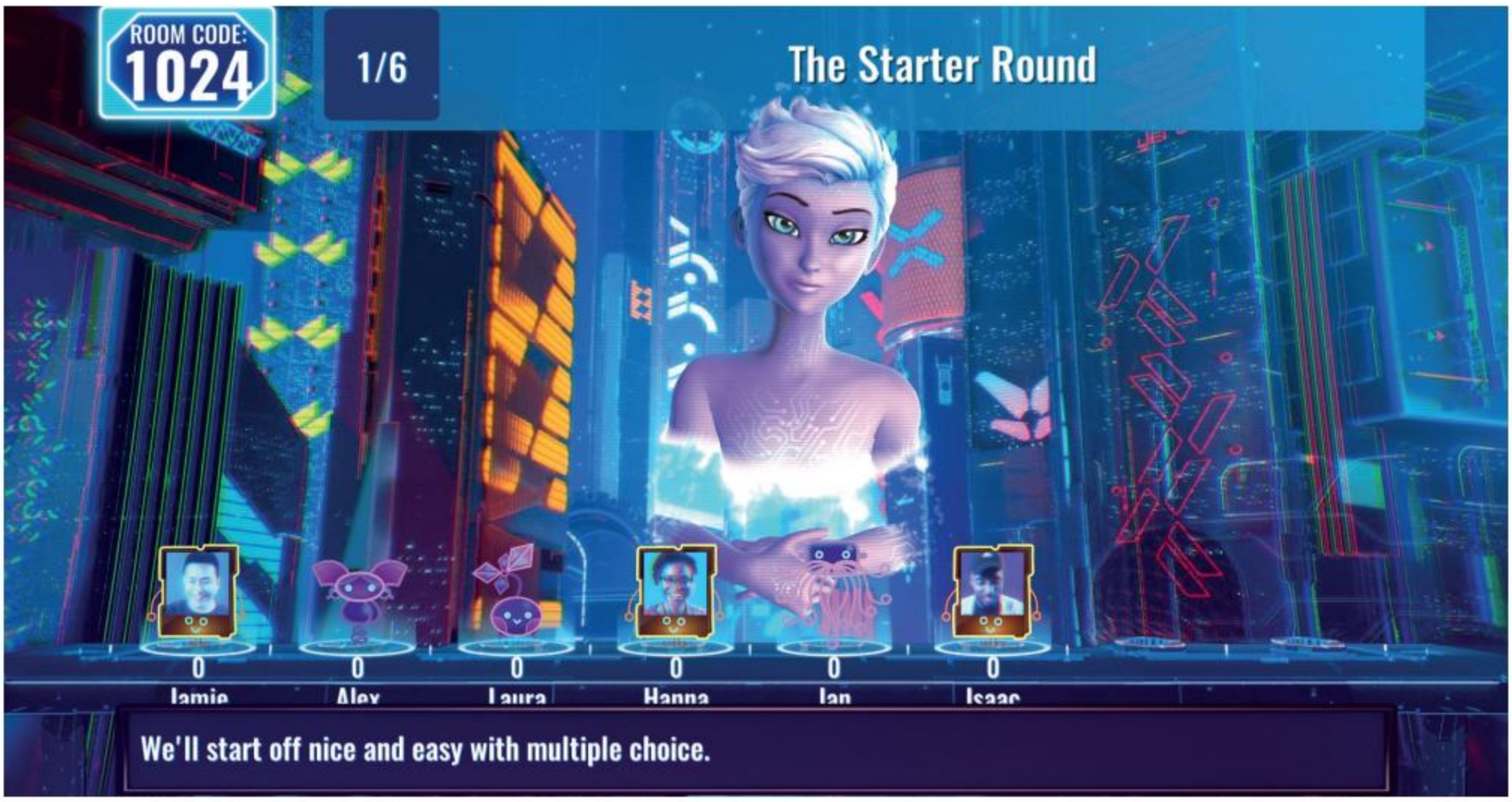
# IT'S QUIZ TIME

**John Broomhall** talks with composer and sound designer of It's Quiz Time, **Dom Beken**




*It's Quiz Time* from ex-*Buzz!* developers Snap Finger Click is a funky social videogame version of *Trivial Pursuit* featuring an intriguing ethereal AI host, Salli, who chit-chats with you, based on details she 'remembers' of your knowledge-base and other information she teases from you and your fellow players. While questions come up on a communal big screen, each player uses their own preferred mobile device as a controlle,r meaning their answer choices can be hidden until Salli chooses to reveal them.

Except for one pre-existing music theme, Dom Beken (of *The Orb* and *PixelJunk Shooter* fame) handled the entire music and audio, also becoming intimate with Salli's speech synthesis engine. "We worked with a partner who has huge experience of speech synthesis and ported their technology to our platforms," says Beken. "Then followed a lot of tweaking and experimentation and text-tagging. There are some weird words she'll struggle with, so you need to use phonetic spellings and experiment with her pauses and intonation. We pitch-shift her and there's some other DSP fx in the mix."

Aided by the context of Salli's sci-fi futuristic AI persona, the result is credible and entertaining and crucially, it means all speech is runtime generated. A perfect way of avoiding countless days and cost recording v/o, and facilitating an endlessly expandable question-base for subscribers. "It's been a process of constant improvement – she gets better all the time," says Beken. "Plus, the more you play, the more she learns about you, using her 'knowledge' to good effect in encouraging and chiding you, and generally taking the piss! We're continually adding to her bank of one liners and jokes."

Audio engine duties are handled by Criware, a choice partly prompted by the team's use of Sofdec for the quiz round bumpers. "As a sound designer and composer, Criware's sister tools ADX and Atom Craft provide a very nice graphical user interface where I can mix up behaviour blocks of music loops in a multitrack format which can be controlled by run-time control parameters. Typically, eight stereo tracks in most rounds whose playback combinations I can manipulate, dependent on how you're doing in the round to increase tension. I can bring additive music in with different combinations of fading, EQ filtering and other effects as you move around game areas."

The interactive music is designed to create the illusion of manual control from a virtual studio allowing for unpredictable lengths of gameplay loops and contributions from Salli across multiple languages. "Designing the music has been quite a challenge harmonically and tempo-wise. My first implementation had the whole game stuck at 128 bpm and that became monotonous. Now, however, there's a whole bunch of different tempos and musical keys. Because it's in this virtual AI world with Salli floating like a semi-humanoid robot, the sound design is quite smilar to *Blade Runner* and the music style is very futuristic EDM. I went back in time and tried to stick to all analogue synthesizers – lots of TB-303, Moog and old electric pianos. It's a slightly grubby future!

"Salli is constantly interacting with you and because she uses realtime speech synthesis she doesn't repeat herself. I'm pleased with how the music responds to gameplay and provides a sense of progression. You feel like you're in your own bespoke quiz show with somebody in the gallery choreographing all the cues and fx and that's exactly what we set out to achieve." ■

John Broomhall is a composer and game audio specialist creating and directing music, sound and dialogue
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# IT'S TIME TO **CHANGE THE GAME**

It's a discussion that needs to be had and must continue to be had. Increasing diversity in the games industry is essential, not just for equality, but for the benefit of the industry's main product – games. **Sean Cleaver** speaks to recruiters to find out how the industry got to where it is today and what can be done to push gender diversity in games development starting with recruitment

Here we are at the end of another year. Can we say that anything has honestly changed? The push for diversity in the industry is never going to be an overnight success. Outside of games, other industries – in the UK at least – have had the benefit of increased visibility for diversity.

This year the gender pay gap hit the mainstream with the release of BBC salaries. While the inequality that women in the games industry face is a battle that's only just beginning, and the visibility of the issues are more limited than those of BBC presenters, we can really begin to staRt fighting that battle.

"The fight has always been there but it feels more emphasised in recent years, which is only a good thing," says Kim Parker Adcock, managing director of OPM Response. "I think it's crucial to push boundaries, and would love to see more women at the forefront of new and developing areas of the industry, such as esports."

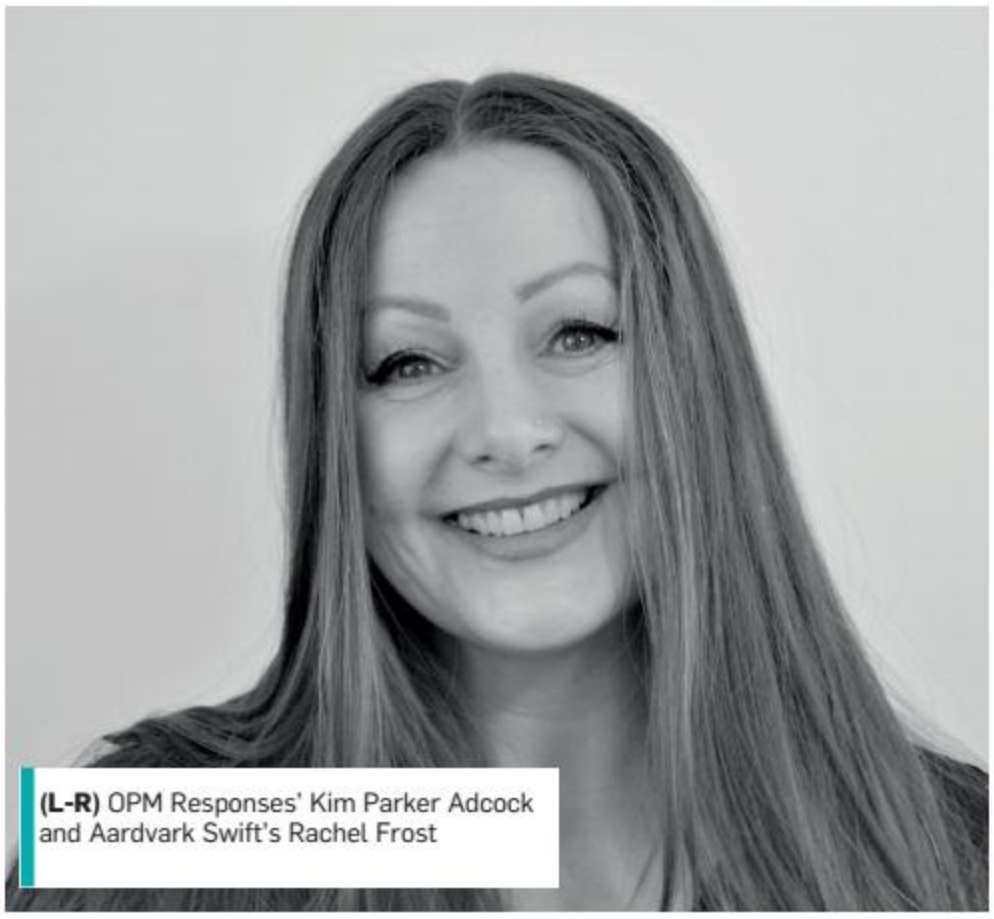
The maddening thing is that women pushing boundaries is exactly how this industry started. "If you dig around, you'll find women involved in every part of our industry's history," says Rachel Frost, marketing manager at Aardvark Swift. "Carol Shaw, the first woman games programmer, created the famous shooter *River Raid*, Danielle Berry pioneered multiplayer gaming and Doris Self is credited as the oldest competitive gamer at 80 years old. The problem is that these achievements are hidden away. According to research published by PwC earlier this year, only 22 per cent of students could name a famous woman working in technology, while three times as many could name a famous man.

"This is endemic of a wider problem that plagues our education system, which often portrays tech industries as a career path for men, not women. Women's achievements often go unrecognised, leading to a lack of role models and young women are less likely to have a career in tech suggested to them by teachers and careers advisors. This has serious knock-on effects further down the line, where women in higher education are five times less likely to be considering tech as their first career choice when compared to men."

## EDUCATING THE INDUSTRY

This isn't going to be a revelatory statement at all, but skills in the UK are lacking when it comes to digital industries. When it comes to increasing diversity in the games industry however, education isn't the only thing failing women.

"Historically the industry has not been very welcoming to women," says Rachel Frost. "Dona Bailey, the first woman to work on an arcade game and the programmer behind the classic *Centipede*, left the industry after receiving heavy criticism from her male counterparts despite her game performing well in the market.



**(L-R)** OPM Responses' Kim Parker Adcock and Aardvark Swift's Rachel Frost

"I'd like to think that the industry has grown up since these early days and become less outright hostile, but according to a study carried out by the Next Gen Skills Academy in 2015, 33 per cent of women in games said they'd experienced direct harassment because of their gender. Furthermore, 45 per cent of women in the industry surveyed felt that their gender was limiting their career progression."

"Women face many of the same challenges as men getting into the industry, it's not easy for anyone," says Kim Parker Adcock. "However, it's harder for women in a competitive environment like this when there are still people with ancient perceptions, such as women being responsible for child care and therefore less reliable. As a woman who started her business as a single mother of children aged 4, 9 and 11, I strongly dispute that.

"It should come of no surprise that a lack of women hired into upper management is also a key part of the problem," adds Rachel Frost. "Not only does it mean that the aforementioned sexism and issues surrounding gender often go unaddressed internally and during recruitment, but it also results in sexism leaking into games unchallenged, in the form of chainmail bikinis, perpetuating the narrative that 'games and the industry are for straight men'."

## CHANGING THINKING

Things need to change from the ground up, which is again another statement that constantly needs repeating. Kim Parker Adcock has an interesting idea however to get more women in through the door of job applications. "I would dearly love to remove first names from CVs and see how many more women are recruited. When equality laws changed in 2006 and we stopped including nationality on CVs, we placed noticeably more foreign nationals than ever before. Enough said."

> **I would dearly love to remove first names from CVs and see how many more women are recruited**
> *Kim Parker Adcock, OPM Response*

"Letting readers of your job ad know that you're an equal opportunities employer sets up a pretence in the reader's mind that you're actively making an effort to promote diversity," says Rachel Frost.

"It may seem like a small alteration to those who this doesn't apply to, but it'll make your job ad stand out for those which it does. Having a zero tolerance policy on discrimination and harassment, as well as providing childcare subsidies, can also lead to a more diverse pool of applications."

The battle isn't just making applications more appealing to everyone, but it is also to be inventive. And, just like Kim Parker Adcock's idea, Rachel Frost believes that removing elements from job applications that indicate gender could be a good step for increasing diverse applications.

"There are still steps which can and should be taken once you've obtained a more diverse number of applications. Recruiting 'blind' by removing any personally identifying factors, such as those which indicate gender, ensuring that hiring managers are aware of the benefits of a diverse workforce and unconscious bias training are all tried and tested methods of improving workplace diversity."

Diversity will make games better, will make the industry better and, more importantly, will be a shining beacon of how a big industry can pave the way in equalising the gap. Gaming is one of the biggest entertainment markets on the planet, if not the biggest, and if we can be at the forefront of promoting and creating diversity in this digital industry then the world of employment will be better for it.

"There have been plenty of studies, which demonstrate the benefits of promoting a diverse workforce," says Rachel Frost. "To begin with, companies with higher percentages of diversity tend to be happier and rate their employer more positively. Retaining a happy workforce is far more cost effective than having to continuously recruit.

"There's also a competitive advantage. Diverse workforces have been shown to outperform teams with less diversity.

"They're able to draw on a range of viewpoints and experiences and can understand the needs of a broader range of gamers. There's also the wider pool of talent to hire from, which is vital in an industry such as ours where certain skills are in such short supply.

"Above all else however, creating a working environment where anyone regardless of gender, race, sexuality or disability feels welcome is simply the right thing to do, and shouldn't require any further justification than that."

The benefits are there to be had, including allowing gender stereotypes to change.

"A more balanced environment, different ideas, different perspectives, maybe even knowing the way to appeal to an additional 100 per cent of games customers without making the game pink," concludes Kim Parker Adcock. "Lara Croft broke the mould years ago and it feels like we're still learning from that." ■

# MOVERS AND SHAKERS

The latest high-profile hires and promotions

## GREEN MAN GAMING

Ian McGregor is joining the UK online retailer and publisher as chief marketing officer. McGregor was most recently at Activision in a similar role for the EMEA region.

"Ian's extensive industry experience at top game publishers, innovative marketing mindset and ability to bring different teams together to deliver impactful results is critical for us to achieve our aggressive targets to continue our fast growth," said Green Man Gaming CEO, Paul Sulyok.

## INTERIOR NIGHT

A new studio has been set up in London by ex-Sony developers. Interior Night is going to be creating games that focus on the narrative experience. Headed up by former Quantic Dream lead designer, Caroline Marchal, the studio is looking to build a team of twenty.

## UNITY

Unity has snapped up two key engine developers to be based out of its new office in Burbank, California. Mike Acton and Andreas Frederiksson have joined from *Sunset Overdrive* and *Spiderman* developer, Insomniac Games, to work on new projects relating to data-oriented programming in Unity.

## UBISOFT BERLIN

Istvan Tajnay, formerly of Ubisoft Blue Byte, is to become studio manager of Ubisoft's newest studio in Berlin.

The new studio is looking to employ around 50 developers and will be working on the *Far Cry* series when it opens in early 2018, a homecoming of sorts for the popular franchise.

## SUMO DIGITAL

Five people have joined the Sumo Digital board. David Wilton joins as group CFO, while Gary Dunn becomes portfolio director, Jim Woods has moved from Supermassive to become senior development director, Scott Kirkland joins as development director and Marin Conner will be studio design director.

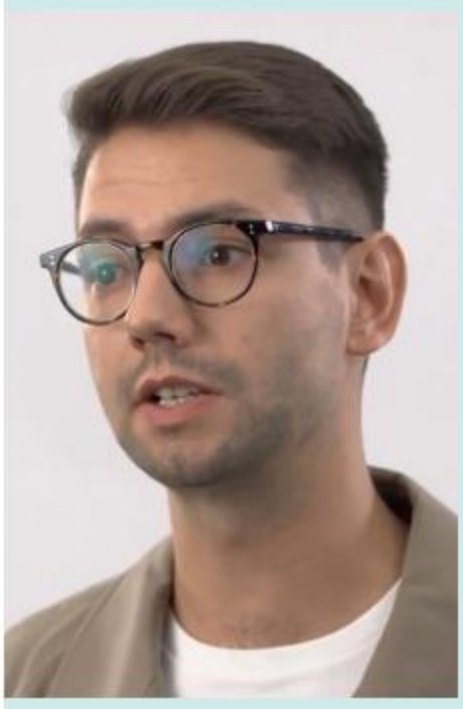
## BGI

Former MP for Warwick and Leamington, Chris White, has joined the British Games Institute team by becoming the chair for the new Policy Committee. White previously chaired the All Party Group on Video Games for Parliament and also helped start the Video Games Tax Relief scheme.

## MCLAREN

The motorsports and engineering company based in Woking has committed to esports by hiring Ben Payne as director of esports.

Payne was most recently with Microsoft in various marketing roles, but also has experience from Sega, 2K and Future Publishing.



## REALITY CLASH

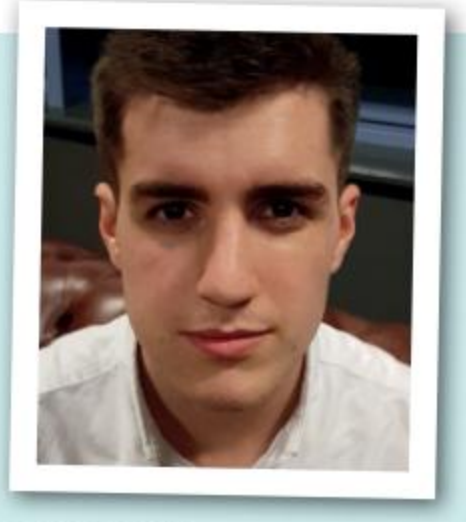
Fresh from being selected as one of the BAFTA Breakthrough Brits for 2017, Fiddlesticks' Henry Hoffman has joined AR developer, Reality Gaming Group.

Hoffman was the lead developer on *Hue*, which saw the studio win a Develop Award. His new role will see him join the development team in producing the AR title *Reality Clash*.

"As soon as I heard that *Reality Clash* combined AR, crypto and multiplayer I knew it was a game I wanted to be part of," said Hoffman.

# GET THAT **JOB**

**This month:** player support manager from Jagex, **Nathan Turner**, tells us about the developer's focus on nurturing talent



**What is your job role?**

I'm part of the leadership responsible for our 24/7 Player Support team, which ensures our people have the right tools, support and training to service our community of millions. Player Support at Jagex is incredibly diverse, covering everything from traditional support emails to risk mitigation, password recovery appeals, anti-cheating operations and player behaviour. It's a unique, non-stop role with real opportunities to make a difference to our players.

**What qualifications and/or experience do you need?**

We don't work in a call centre environment, so we're looking for experience of dealing with people face-to-face as we find that many of the skills relating to personal interactions transfer well into our service culture. I often value experience over education. If you have the right attitude and approach, work well in a team, are great at solving problems and just doing what's 'right' then we can teach you the rest.

For our managers, it's all about being able to lead, motivate, and inspire a team of highly capable support specialists. They also need to be able to step up into project management roles and lead player-focussed initiatives such as live streams, player visits, community events, volunteer players and social media AMAs.

**If you were interviewing someone, what do you look for?**

Great communication skills. Player Support is all about relating to people, understanding their needs and working smart to design creative customer centric solutions. I also look for real examples of where they've demonstrated continuous improvements to the customer experience.

Above all we have a strong service ethos so I'm always focused on finding people who have a genuine 'can do' attitude, willingness to get involved and an optimistic outlook.

> **We recognise that leadership isn't for everyone**
>
> *Nathan Turner, Jagex*

**What opportunities are there for career progression?**

We see part of our role is to identify and nurture exceptional talent, enabling our staff to take on new challenges. We're proud to have members of Jagex's executive team whose first day through the door at the company was to join the Player Support team!

For those wanting to pursue a career in leadership, they can work to become a Senior Specialist with additional responsibilities with exposure to resource management and coaching/feedback.

We recognise leadership isn't for everyone, so we also offer a wide range of curator positions which focus on being the subject matter expert for key areas of the department. Those things aside, Player Support is also home to the anti-cheating team giving people exposure to more technical work, as well as data analytics, trends and pattern monitoring as well as detailed community investigations. ■

# **SKILLS** AND **TRAINING**

**This month:** We look at the BSc and MComp games computing courses at the University of Lincoln with senior lecturer Dr. Chris Headeland

**Overview:** BSc and MComp Games Computing

**Address**: Lincoln School of Computer Science, University of Lincoln, Brayford Pool, Lincoln. LN6 7TS

**T:** 01522 886644

**E:** enquiries@lincoln.ac.uk

**W:** http://www.lincoln.ac.uk/socs/

The University of Lincoln is arguably best known for its journalism courses, but in the age of digital technology it's moving into computing and games. "Lincoln aim to develop the skills and attributes required for roles in the games and entertainment industries, including mobile, social media and console game development," says University of Lincoln's senior lecturer, Dr. Chris Headleand.

"The strong conceptual and methodological grounding in both games design and games development makes Lincoln's programmes distinctive. Students are encouraged to recognise that software engineering is as important as creative design in the success of computer game products, and to explore the role of games as contemporary cultural artefacts.

"The programmes explore games design and games programming, 3D graphics, mathematics, games engine programming and other specialist topics such as artificial intelligence and social gaming."

Lincoln has not only invested in new computing labs, but a new building. "We ensure our students all get access to modern high-spec gaming computers for their workshops, all our computers have a range of games engines and other games development software pre-installed," says Dr. Headleand. "We also have a huge range of gaming hardware including movement interfaces, mobile devices, and wearables. In our new building we have a number of bespoke facilities including a virtual reality suite."

A recent graduate joined Criterion Games in Guildford, showing the skills the courses can teach. However, there are more local options available. "Our programmes are supported by an enterprise liaison officer, and an industry panel," says Dr. Headleand, "in order to both ensure that the curriculum is modern, but also to encourage employability.

"This link to industry provides our students with a number of opportunities to engage with companies. Students can choose to undertake placements between years as part of a sandwich course. Some of our current academic team also work in the games industry." ■

# RECRUITER **HOT SEAT:** BOSSA STUDIOS

This month, Bossa's head of HR, **Michael Christie**, talks about being involved in new exiting projects and the potential for profit share

**What differentiates your studio from other developers?**

Bossa Studios is a BAFTA winning independent games developer and publisher founded in 2010 with a passion and reputation for making fun and exciting games, created with an open development ethos that brings the community into the fabric of everything we do.

Here at Bossa, we are driven by doing things differently with creativity, charm, and flair and we are not afraid of trying new things! Our game jams are particularly important to us as every game at the studio starts its life in this way.

We have recently launched *Worlds Adrift*, with the ambition to create a new breed of multiplayer games based on crowdsourced content and new technology. We pride ourselves on being at the forefront when it comes to new technologies, a well established leader in the use of VR, we also hold regular AI meet-up sessions at the Bossa studio, which are proving to be very popular indeed as the industry and our community grow to be as fascinated in AI driven narratives and design tools as we are. We were proud to recently welcome Chet Faliszek to the team to explore this further in a new project coming to Bossa which we are also beginning to recruit for.

We are also dedicated to nurturing upcoming talent whether this be through our strong relationships with our various college and university partners or simply offering opportunities to spend a day with the team, observing and learning more.

**How many staff are you looking to take on?**

We are currently recruiting for a number of positions in both our London and Seattle offices. The roles are across all disciplines but we are particularly interested in hearing from programmers of all levels and skillset.

**What perks are available to working at your studio?**

We offer a well rounded and comprehensive benefits package to anybody that joins Bossa, which includes a contributory pension scheme, private healthcare cover, life assurance, employees assistance programme, cyclescheme plus many more benefits.

One key benefit here at Bossa is our profit share initiative, which allows all employees to benefit from Bossa's success.

Worklife balance is also important to us here at Bossa and therefore we also offer the opportunity of flexible working when required.

You will also have access to our Nerf gun armoury and as much free food and drink as you can handle.

**What should aspiring devs do with their CV to get an interview?**

Keep your CV as clear and concise as possible. CV's that are long winded might not get the attention they require. Make sure you detail your most relevant skills and make sure they are relevant for the role you are applying for.

Here at Bossa we are recruiting people, not just 'programmers', so also make sure that your personality shines through and make it clear why you would be a good fit for Bossa and display that passion for games and what we do.

All our jobs are advertised on the Bossa job website, and don't worry if there isn't a current suitable vacancy. There is also a section to submit speculative CV's for future consideration from our team.

**What advice would you give for a successful interview at your studio?**

For a successful interview, be yourself and let us know why you want to work at Bossa.

We are always looking for people who have a genuine interest in the projects Bossa Studios is working on and who will positively fit into the studio and our culture.

Make sure you do your research on the company and the job that you are interviewing for. And ensure you demonstrate your skills and ability throughout the interview.

**Who is the best interviewee you have ever had and how did they impress you?**

The best interviewees are those that turn up having done their full research on the company and are well prepared for the interview. Make sure your research includes the culture, history, and values of the company and you are also up to date on what projects are currently being worked on. I'm always impressed when candidates show a true interest in the studio and a passion for the work that we create, or tried something new and creative to show us their personality. We had someone make a rap video about our game as their CV, while another wrote a choose-your-own interview turn based adventure showing the charm and flair that defines a Bossian. ■

## CURRENTLY HIRING

**Company:** Bossa Studios
**Location:** London and Seattle
**Currently hiring:** Art, programming, design and QA
**Where to apply:** www.bossastudios.com/jobs

> **We had someone make a rap video about our game as their CV**
>
> *Michael Christie, Bossa Studios*

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To see our full jobs board, sign up for our jobs newsletter or to post your own job ads, visit: **www.develop-online.net/jobs**

# ASK AMIQUS

**Liz Prince,** business manager at recruitment specialist Amiqus, helps solve some of the trickier problems job seekers currently face in the games industry

## Q What are developers going to play this Holiday?

With the holidays on the horizon we can all look forward to some well deserved gameplay time. Searching for some seasonal inspiration? We asked those talented folks who make the games what they'll be playing.

### FUN TIMES – NOT JUST FOR THE KIDS

Brynley Gibson, head of studios at Curve Digital Entertainment answers emphatically, "Nintendo Switch! There are so many great titles coming out and it is killing it. The portable nature means families coming together in different homes can bring this entertainment with them. Even many of the core games are family friendly. Just try to remember not to thrash your kids at *Splatoon* and celebrate too wildly."

CEO and co-founder of leading VR games developer nDreams Patrick O'Luanaigh is also on the fun train. He told us he's looking forward to playing their latest title *Shooty Fruity*, which launches on December 19th, just in the nick of time for the Christmas break.

Our own Will at Amiqus and self-confessed big kid explains his top choice "*Battlefront* of course, because as well as seeing the new *Star Wars* movie with the team on release day, all of us will be buying the game – we're getting the old gang back together."

### CHRISTMAS CATCH-UP

"The Christmas holidays is definitely a time for catching up on gaming for me," says Ian Masters, co-founder & creative director of Quiztix.

"I already have too many games on my list to possibly do them justice but I'll do my best: *The Sexy Brutale*, *Hollow Knight*, *Absolver*, *Cuphead*, *Jettomero*, *Rock of Ages 2*, *AC: Origins*, *Lego Marvel Super Heroes 2*, *Hidden Folks*, *What Remains of Edith Finch*, *Echo* and *Future Unfolding*. I'm really glad *Far Cry 5* isn't out until February and that I don't own a Nintendo Switch... yet!"

Albert Marshall, also of Quiztix shares "I'm jealous of people who have the ability to invest any serious time to games - my fault by having kids who now dictate my playtime! With the time I do have I'll be getting stuck in to *FIFA* and *Super Mario Odyssey*."

> **The most mentions so far isn't a title – it's Nintendo Switch**

Tom Beardsmore of growing indie developer Coatsink will also be playing catch-up. "Between work and family it's easy to lose track of release schedules.

"I do plan to complete some games on my backlog, though: *Breath of the Wild*, *Dying Light*, *Deus Ex*, *Divinity* and more. I'm a big fan of co-op games right now, so fingers crossed we see some good ones come out for the break."

Russ Clarke, founder of Payload Studios the makers of *Terratech* hopes to 'Switch' things up. "In theory I plan to (finally) buy a Switch and play *Breath of the Wild*, but in reality I'm still hooked on *Street Fighter V* and will probably burn all my gaming time getting beasted online. Season 3 hype!"

### CHRISTMAS CRACKERS

Harvey Scott, sound designer at Sumo Digital has no doubts about his choice for the holidays. "I'll be playing *Rainbow Six Siege*, it's had great continued post launch support, development and continues to cater and interact with its booming fanbase."

Peter Harries, game designer at Sumo Digital gave us his top three. "PC - *World of Warcraft*, catching up after seeing the latest expansion announcement. PS4 will be *Crash Bandicoot N'Sane Trilogy*, picked up a copy recently and I'm just loving it. Finally, I'll be out and about on the mobile still be trying to become a master in *Pokemon GO*."

"*Skyrim* for the Switch will be taking up my time over the holiday season," Richard Blackley, audio designer at Playground Games told us. "I missed it the first time around so I'm really excited to play it in pint-sized form. I've heard so many good things already and a few of my buddies have put countless hours into it."

David Barton, EP at high performance computer vision specialists Cubic Motion already has the spare holiday hours mapped out "I'll be playing *Horizon Zero Dawn DLC*, *The Frozen Wilds*. It's a brutal and beautiful game that will consume the majority of my holiday, the sheer scale of the game is frightening, so many missions, so little time. It will be January 2nd before we know it."

Derry Holt, founder of Oneup Sales & Stormburst Studios confesses, "I have an unhealthy addiction to *League of Legends* and I don't see that changing. I've always been a fan of competitive games. I might sink some time back into *Starcraft II*, otherwise I'll likely end up playing *Fortnite* with a few mates over the Christmas period."

### RETRO ALL THE WAY

Andrew Bennison, Founder of Prospect Games reveals he'll be going retro. "My trusty N64 always makes an appearance at Christmas. This year I'm positive my Switch will join in the fun as well, so I expect to play *Mario Kart*, more *Mario Kart* and hopefully some *Mario Odyssey* as well."

### CHRISTMAS CHEERS

The most mentions so far isn't a title - it's Nintendo Switch. Seems it's not just what you play, but the way that you play it. Bennison signs off with an important message for any season. "It's easy to get burnt out in game development. It can put you off playing games altogether. Like anything in life, striking a healthy balance helps you stay motivated to work and stay connected to the passion that got you started in the first place."

We'll raise a glass to that, cheers to another game-filled Christmas and fantastic 2018. ■

**Liz Prince**, business manager at recruitment specialist Amiqus, helps solve some of the trickier problems job seekers currently face in the games industry

amiqus Visit **amiqus.com** for a fresh perspective on games recruitment

# EPIC OPPORTUNITIES AWAIT IN THE UK

**Emily Gabrian**, senior recruiter at Epic Games talks about the amazing opportunities available for talent at the engine developer, and not just for game development

How is it that 20 years after *ZZT*, Epic Games is still doing something new every day? The answer is people. Each individual at Epic Games contributes to the studio's capabilities to build and maintain the technology that makes up Unreal Engine 4 and an ever-increasing roster of new properties such as *Fortnite*, *Paragon* and *Spyjinx*.

Epic has been making games since 1991, and uses that history to leap forward, with eyes looking toward the future. A great example of Epic's fearless evolution is its presence in the UK, boasting three engineering-focused studios spread across Guildford, Sunderland, and Leamington Spa.

In the beautiful brick buildings of Guildford, Epic is making sure that UE4 runs on all consoles, from PS4 to Xbox One to Switch, and beyond. From here, the Unreal Engine console team works closely with Epic's internal games teams across the pond on performance, optimization, and support.

If there is something developers want to know about shipping on current and next generation hardware using the leading game engine, these are the people to know.

It takes more than engineers to ship innovative technology, of course. One of the benefits of building a massive, freely available realtime rendering toolset is that it opens up collaboration with artists, designers, and industries who share a mutual love of creating immersive experiences.

> **The roles we are looking to fill here in the UK offer an amazing opportunity to join Epic**
> *Mike Gamble, Epic Games*

This is where the incredible people known as developer relations technical artists and developer relations engineers come in. Working alongside members of the UE4 team in Epic's Guildford office, the developer relations team works with external developers across games, media and entertainment ('M&E' if you're in the biz), architectural visualization (arch viz) and the automotive industry.

These teams and individuals are impacting the future of Epic and other companies around the world, often by traveling directly to Unreal Engine licensees to apply their decades of experience and knowledge of realtime tools to accomplish things never before done.

It sounds a bit hyperbolic until one takes part in such bleeding-edge collaborations, like the one amongst Epic, The Mill, GM and Chevrolet for The Human Race, for example. Epic is already hard at work for 2018, preparing to break new ground anywhere realtime rendering technology can enhance an interactive experience.

"The roles we are looking to fill here in the UK offer an amazing opportunity to join Epic during the most exciting time in the company's history," said Mike Gamble, european territory manager, Epic Games. "Our developer relations positions in particular offer a unique chance to engage with the world's best developers while putting one's knowledge and expertise to meaningful use across a wide variety of projects."

One individual at a time, Epic UK is looking for senior engineers with experience for console and physics teams, as well as passionate technical artists to join our developer relations ranks.

No stranger to genre defining roles, Epic is excited to share its combination of experience and ambition with people who want to shape the future. If we keep this up, we may have to call it the 'Real' Engine. Epic opportunities do await in the UK.

**CURRENT OPEN POSITIONS:**

Engine Programmer (Console)
Physics Programmer
Dev. Relations Engineer
Dev. Relations Technical Artist
Technical Account Manager, M&E

For more information, visit **epicgames.com/careers**

# The develop POST-MORTEM

## JOB SIMULATOR ■ the 2050 archives

It's our recruitment special, so we decided that there was no better game to look back to than Owlchemy Labs' Job Simulator. **Sean Cleaver** sat down with CEO Alex Schwartz to get the story behind the multiplatform virtual reality success and how to build VR from the ground up

In the near future, robots will look back on us and find nothing but humour at the kind of jobs we used to do. The professions we used to class as essential are now amusing sideshows for our robot overlords.

At least that's what happens in *Job Simulator*. The game from Owlchemy Labs has become one of the standout VR experiences and an early statement of intent for the medium. It was released in 2016 as an HTC Vive launch title before Oculus Rift and PSVR, but the story goes back to 2013.

### AAAAAAAAAAACULUS!!!

That was a title of the first VR game that ever shipped on Steam that wasn't made by Valve, and one of the teams behind it was Owlchemy Labs. "When you talk to VR developers, everyone quotes the DK1 Kickstarter and there was this confluence of price and availability of off the shelf hardware," explains Owlchemy CEO Alex Schwartz. "People who wanted VR to happen over the many years saw the DK1 and thought this might be the beginning of a new curve. That was the beginning for us as well."

*AaaaaAAaaaAAAaaAAAA* was a base jumping game previously developed by Owlchemy and the first to be converted to a VR game with the prescribed number of A's before the play on the name Oculus. "A lot of people told us it was the first piece of VR content that they played," says Schwartz. "It kind of violates a number of core principles we stand for today, which is to fly at a high velocity off of a building. It was a good first experiment but it also goes against the concept we believe in that you should build from the ground up for VR."

That was when Valve decided to make Owlchemy an offer they couldn't refuse. "We'd spoken at a Steam dev day – the first day, about the concept of what was learned in VR, this was before the best practices guide existed – and that was when Valve pulled us aside into a secret meeting. Ten to fifteen people in the room, with HTC there, many NDAs, snipers on the roof 'You cannot talk about anything we're discussing right now' kind of thing. They said 'We're building a brand new piece of VR hardware and we want you to drop everything you're doing and build for us'.

"It was Chet [Faliszek] from Valve who brought us in and, in typical Valve fashion, they said 'Here's some cool stuff, would you like to develop for it?' We tried their tag room, Valve's room-scale demo, and that was when our minds exploded. The DK1 didn't have good positional tracking. So to be able to crouch down, lie on the floor, look at the sky and walk around an entire room – that was the moment where I realised that was what Owlchemy was going to be doing forever."

### BASEMENT DEVELOPMENT

We now know Owlchemy as a standout success story for VR, which saw *Job Simulator* immediately attain

high levels of industry hype after its GDC debut. What we didn't know then was that a few weeks before that, the game didn't even exist.

"Valve and HTC said we'd get a piece of hardware in January and then said 'You're going to show it to many thousands of people at GDC in a couple of weeks'," says Schwartz with a laugh. "You have nothing and then you're going to show it (you can only show it to a couple of hundred people in VR because of the timing) but this will go worldwide. Millions of people will see this. We ended up in Time magazine with a screenshot with what we had built in that three-week period. We didn't know the gravity of what was happening.

"We were an all-remote team and we were going to get one headset just barely in time. So we all decided to meet up in Canada at my co-founder Devin Reimer's house. Because his wife was eight months pregnant with twins and you can't leave and get on a plane when you are that pregnant. So we said 'We'll come to you.' We essentially prototyped in a cold Winnipeg basement for a week with the hardware and came up with *Job Simulator*."

## CRAZY PEOPLE

"It sounds like you're a crazy person when you say that you got in a room, had a piece of a VR hardware and that our logical deduction was to make a game simulating the future where robots have automated all society and now you're going to learn 'How to job' or 'What it was like to job'," Schwartz jokes. "The leap from nothing to that seems to make no sense to people.

"Valve was very smart to not give us sample games or content. They gave us nothing. We were building in Unity and you start with a big empty white scene that's tracked and nothing else. The first thing we did was to add some hand representation so you could see your hands. But then I thought okay, empty scene – what do I do next? I built a table and then I put some blocks on a table. The next logical thing was we add physics to those blocks and then make it so you can pick up those physics.

> **We threw out more than half of what we built throughout development... it just didn't work**
>
> *Alex Schwartz, Owlchemy Labs*

"When you've developed enough games, you get into this mode where you're rote building and not playing. You're just implementing and focusing on the craft and not the experience. But we found ourselves sitting on the floor while testing and playing with stacking blocks and knocking them over like children making block towers.

"We found ourselves there for twenty minutes playing with these physics with our hands and we said 'We've found something magical. What if we build a game around near field physics manipulation with your hands?' Because it seems that 1:1 grabbing and throwing, it just feels great. That's where the premise emerged – what environments could possibly be filled with lots of small hand sized tchotchke's that were physics based?

"We started a Google Doc and I temporarily named it *Job Simulator*, because the content was what you could see yourself doing as a job," explains Schwartz. "It was that kind of joke name that stuck.

"In fact, near the end of development, one of our devs sent a message to our Slack saying 'Guys, have you been thinking about what our real name for the game is going to be? What's the plan?' That was essentially the genesis of it. To start with nothing and see what was fun vs. sitting in a room and writing down what would be done, what would VR afford."

## ACCLIMATION

One of the great things about *Job Simulator* is its use of space and how it best utilises the medium of virtual reality without alienating the player from its own in-game reality. "The entire development cycle felt like a never ending game jam, because you're always prototyping, but you can't ever know if something is ever going to work, how it's going to work or that it will be fun," say Schwartz.

"We threw out more than half of what we built throughout development because it sounded good in our heads but tried in VR, it just didn't work. We had tonnes of jobs. In fact, in the beginning we thought it would be fun to have a large number of different environments, like twenty. And each job would be much more simplistic. Almost approaching *Warioware* level mini rooms. But we found early on that when you get thrust in to a brand new

environment in VR and you need to figure out the world around you, it's totally different than being presented with a 2D screen and situation like in *Warioware*. People want to acclimate to their surroundings first, so speed is not necessarily the best thing.

"I guess one of the big concepts that we learned is that interaction disappointment is something we are striving to avoid through the entire design. That's a negative way of saying it. The other way would be to say that everything you see in that world needs to go above and beyond to satisfy your worldview of how it should function. We went more and more towards that.

"We scrapped breadth for depth and a lot of our testing and implementation involved people doing things we didn't expect. Seeing them do a thing and be disappointed because it didn't work and then going back to add it was our top to-do item. There's so many stories of exactly that.

"One I can think of is that my wife grabbed a plate in an early version. She was holding it and she threw it on the ground. It just kind of sat there and she was like, 'This sucks.' She said out loud, 'No, not good.' So when you're disappointed, as your world view is plates are made of ceramic, they should break and when that doesn't happen you say 'Oh, I'm in VR and not everything is great'. So we just continued to fill those gaps and create a world where people are almost devilishly going 'Oh, the devs would never have thought of this', they do it and it then responds and they say 'This is the greatest thing I've ever seen'."

> **Interaction disappointment is something we are striving to avoid**
>
> *Alex Schwartz*
> *Owlchemy Labs*

## SIMPLY DOES IT

*Job Simulator* employs a very simple premise – if you see an item, you can grab it. Your interaction with that is purely movement and one button to pick the item up. That wasn't always the case though. "Being multiplatform was key for us," explains Schwartz.

"We got Vive controllers and realised the six degrees of freedom hands movement was amazing. Then Sony announced the Move controllers, which had existed for many years. Touch was announced, but a way out. We took a look and asked what is the standard across these. You can do infinite movement, but you also have a trigger and they all have an extra button just to hit a menu. But we struggled for a long time with wanting to have a second action button.

"It was actually an active effort throughout the development. We found solutions to avoid two button actions. With the fire extinguisher in the kitchen, if you pick it up and use the trigger, how do you do the thing that the item is supposed to do?

"We always found a workaround for a second button because we didn't want the accessibility to go down. We ended up finding funny physics solutions to everything. It's got a huge button on the top and that's not how fire extinguishers work, but in this world you're kind of building the Little Tykes version of what a kid thinks of how the world functions."

Getting this right meant many hours of testing, but to get honest reaction from users, untainted and fresh from the experience, much of the game's changes were utilised from feedback at trade shows rather than a QA team.

"Our development process meant that we were able to externalise a lot of our QA and have it at GDC, Oculus Connect and PlayStation Experience. Those moments were essential to making this a quality game. You can test infinitely with your own team and still make a completely unintelligible wreck of a piece of content, because it's about the new user getting in and that first onboarding experience.

"You use up one person's ability to get that first experience off them, so you have to get more and more new people coming in to your office all the time to do those early tests.

"If we changed how something worked in the game and someone tested it at point A and point B, there'd be a lot of resistance to the change. B may have been a better solution but anyone who experienced the earlier version might be tainted."

## ON THE JOB TRAINING

Being one of the pioneers of VR is not without its risks, but Schwartz believes Owlchemy has found the best approach in developing for the medium – originality and accessibility. "It's so easy to take what existed in video games and just apply it to VR and say 'Here's what gamers want'," says Schwartz.

"If you look at the history of games, we fucked up pretty bad in the 80s and 90s, marketing towards young males and it shifted to not be the most accessible way to digest content. Look at a controller, it has so many buttons that if you show it to someone who doesn't know video games, they're running out the door.

"VR is a bit of a refresh, a way to interact with computers that we can start over and say 'This is for everybody'. We shouldn't use tropes from games when we can jettison all that and start again. So for us, avoiding crazy horror jump scares or guns, those are two big initiatives for us." ■

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# GAME FOR A **LAUGH**

Byron Atikinson-Jones, indie developer and trainee stand up, is getting closer to his comedy set for GamesAid. Mode 7 co-founder Paul Kilduff-Taylor has some advice for him

The fateful hour is rapidly approaching, when my first practice run of appearing on stage and trying to get people to laugh happens. I've got a sense of calm about me that I'm sure will evaporate closer to the date – at which point I'll probably be in a state of perpetual panic. It's only five minutes on stage but I'm sure the TARDIS will appear and the Doctor will step out to berate me for manipulating time when that five minutes seems to stretch on for hours.

I've started to notice that I'm looking for comedy in every day events now. I just came back from a trip to the US and while I was over there a lot of the differences in the way Americans speak opened up a lot of opportunities to mine comedy nuggets out of them. For example, somebody told me to 'make a left' when we came up to a junction. My immediate thoughts were: How do you 'make' a left? What does one look like? Do you sculpt one out of wood? 3D print it? What colour should it be?

Of course, they meant 'make a left turn' but the abbreviated version in the right context of a comedy night could be hilarious. I'll let you know if it worked or not.

Can you see where I'm going with this? It's going to be all down to how I present it on the night. Comedy is not just about stories but how you tell these stories. Context is king and I'm pretty sure the really good comedians can turn the most mundane thing into award winning comedy through pure charisma. Watch some Billy Connolly and imagine yourself saying the same things. Would it still be funny?

Even just typing this article the nerves are coming back. It's okay when I'm not thinking about it but there it is. Luckily while at the Develop conference I managed to have a chat with yet another game industry person I found who's also had some experience in doing stand-up comedy. It's amazing just how many there are! I'm starting to wonder if everybody's done it and I'm just being slow.

> **I think it's brilliant you are doing this**
> *Paul Kilduff-Taylor*
> *Mode 7*

**Who are you and what's your connection to the games industry?**
I'm Paul Kilduff-Talyor, the co-founder of Mode 7 and we make games and publish other games. We made a game called *Frozen Synapse* in 2011 and another one called *Frozen Cortex*. We like slow detailed games for people who like to spend a ridiculous amount of time doing every single task. We recently published *Tokyo 42* which wasn't turn based, so we had to catch up to the relatively high speed of its developers Smac Games.

**Rumour has it you've done some stand-up comedy?**
For my sins, yes, I've done a little bit when I was 16 and I recently did a couple of open mic nights so I am probably the worst person to give advice on comedy as I've bounced off its lower rungs many times. I think it's brilliant you are doing this, it's a very good thing to do just in terms of your own confidence – certainly for public speaking.

**So, any tips on not dying on the night of my routine at the Comedy Store next year?**
I think the most important thing is to absolutely not care what happens because an audience at any comedy event is essentially captive and they are just looking for any way to escape most of the comedy nights I've done before.

So, if you could stand on stage and just stare at them for your entire time then that would be better than a lot of first time comedians.

As long as it's not painful for the audience, as long as they can't visibly see your own torture played on your face then they will have a good time and they will thank you and they will be grateful to you for the brief reprieve you are giving them by sharing the space with them.

The bar is very low and you must bare that in mind at all times. ■

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